



ROYAL BURGH OF ST. ANDREWS.

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# REPORTS

BT YHE

Medical Officer of Health,

Veterinary Inspector

AND

Sanitary Inspector,

For the Year 1929.







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To the Department of Health for Scotland, The Provost,  
Magistrates and Councillors of the Royal Burgh  
of St. Andrews.

Gentlemen,

In submitting my Report on the Health of the Burgh of St. Andrews, for the year 1929, I gladly avail myself of an opportunity of expressing my indebtedness to all those associated with me in the health activities of the Burgh. No Medical Officer of Health could serve a more sympathetic or progressive Town Council or wish for better co-operation on the part of his colleagues among whom are all the general practitioners of the town.

I have the honour to be,

Gentlemen,

Your obedient Servant,

G. MATTHEW FYFE, M.B., Ch.B., D P.H..  
*Medical Officer of Health.*

May, 1930.

Public Health Department,  
James Mackenzie Institute for Clinical Research,  
St. Andrews.

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# ANNUAL REPORT, 1929.

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## STATISTICAL COMMENTARY.

### Population.

According to the estimate of the Registrar General the population of the Royal Burgh of St. Andrews at the middle of 1929 was 8716. In 1928 an estimate of 9922 was given, so that the Registrar General has indicated a reduction during the year in the population of the town by over 1200.

The principle on which the revised estimate has been made was as follows. The census figures for 1911 and 1921 showed an increase which was greater than the average natural increase of population in a Scottish Burgh. The difference could only be explained by inflation due to the presence of summer visitors and, allowing for excess, the Registrar General calculated that the actual population in 1921 was approximately 8676. This figure was adopted as a basis for post-censal calculations.

Calculation of changes in population since 1921 has been based on the mean of three separate estimates, the first calculated on changes in the number of houses, the second on changes in the number of Local Government Electors and the third on the natural increase as shown in the Births and Deaths Register Book. The housing increase in St. Andrews in 1928 indicated a population increase of 8·31 per cent., but the figure for electors indicated a decrease of 1·40 per cent., and the natural increase figure showed a decrease of 4·20 per cent. The mean of these three was an increase of 0·9 per cent. This figure was applied to the revised 1921 estimate and the result was an estimated population of 8754.

All estimates were then finally adjusted so as to make all local estimates sum to the estimate for the whole of Scotland. This adjustment in the case of St. Andrews caused a deduction of eight and thus the final estimate for 1928 was 8746 instead of 9922.

On the same principle the population in 1929 was estimated to have been 8716, *i.e.*, reduced even under the revised estimate by 30 since 1928.

There can be little doubt that this estimate is not in accordance with fact. In addition to an increased number of students and

scholars, for all of whom the services of the town have to be made available, an increase has occurred since 1921 in the number of houses in the town while practically no houses have become uninhabited. Since 1921, 306 houses, all of which are occupied, have been built by the Town Council. Sixty-eight houses in addition have been built by private enterprise and 13 under Government subsidy. Yet, according to the Registrar General, the population has increased by only 40. It is more probable that the population of the town is slightly in excess of 10,000.

### **Birth Rate.**

The total numbers of births (including illegitimate), corrected for transfer-in and transfer-out, was 109, of which 52 were males and 57 females.

The birth rate per 1000 of estimated population was 12·5 as compared, on the basis of the revised estimated population, with 13·6 in 1928.

The birth-rate for Scotland was 19.02 per 1000 of population, a figure lower than in any year since compulsory registration was introduced in 1855.

Illegitimate births numbered 6, representing a rate of 6·4 per 100 births. There were 2 still births as compared with 3 in 1928.

### **Marriage Rate.**

Fifty-two marriages were registered during the year as compared with 37 in the previous year. The rate for 1929 was 6 per 1000 of estimated population.

### **Death Rate.**

Corrected for transfers, the number of deaths from all causes was 123, of which 57 were males and 66 females, the rate per 1000 being 14·1, a figure higher by 1·6 than the birth rate. Three deaths were due to the principal epidemic diseases.

There was a further increase in the tuberculosis death rate. The rate per 1000 in 1928 was 0·57 and in 1929 was 0·92.

### **Infantile Mortality.**

The number of deaths among infants fell from 76 per 1000 births in 1928 to 55 per 1000 births in 1929. The rates for the past 10 years were as follows :—



| Year - - - -             | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|
| Infantile Mortality Rate | 73   | 31   | 80   | 68   | 76   | 52   | 43   | 46   | 76   | 55   |

The causes of death in 1929 were as follows :—

| <i>Age.</i> | <i>Cause of Death.</i>            |
|-------------|-----------------------------------|
| 12 hours.   | Internal haemorrhage.             |
| 4 days.     | Prematurity.                      |
| 6 days.     | Prematurity, bronchial pneumonia. |
| 10 days.    | Congenital malformation.          |
| 12 days.    | Prematurity.                      |
| 2 months.   | Whooping cough.                   |

All, except one, of the deaths occurred within the first three weeks of life. One death occurred from an infectious disease and 5 were due to ailments against which no known measures of immediate treatment or prevention could have been of avail.

Two deaths occurred among children of the 1-5 years age group. There were none in 1928.

*The following is the Registrar General's Table showing the causes of deaths in St. Andrews at various age periods :—*

| No.              | Causes of Death.                                  | All Ages   |       |         | Age |     |     |     |     |     |     |     |     |     |     |           |     |     |
|------------------|---|------------|-------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----|-----|
|                  |   | Both Sexes | Males | Females | -1  | 1-  | 5-  | 10- | 15- | 25- | 35- | 45- | 55- | 65- | 75- | 80 & over |     |     |
| 1.               | Whooping-cough, ....                              | 2          | 1     | 1       | 1   | ... | 1   | ... | ... | ... | ... | ... | ... | ... | ... | ...       | ... | ... |
| 2.               | Diphtheria, ....                                  | 1          | 1     | ...     | ... | ... | 1   | ... | ... | ... | ... | ... | ... | ... | ... | ...       | ... | ... |
| 3.               | Influenza, ....                                   | 6          | 3     | 3       | ... | 1   | ... | ... | ... | ... | ... | ... | 2   | 1   | 2   | ...       | ... | ... |
| 4.               | Other Epidemic Diseases, ....                     | 1          | 1     | ...     | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1   | ... | ...       | ... | ... |
| 5.               | Tuberculosis of Respiratory System, ....          | 6          | 4     | 2       | ... | 1   | ... | ... | ... | ... | 1   | 2   | ... | 1   | 1   | ...       | ... | ... |
| 6.               | Tuberculosis of Intestine and Peritoneum, ....    | 2          | 1     | 1       | ... | ... | ... | ... | 2   | ... | ... | ... | ... | ... | ... | ...       | ... | ... |
| 7.               | Malignant Tumours, ....                           | 16         | 7     | 9       | ... | ... | ... | ... | ... | ... | 2   | 1   | 3   | 7   | 3   | ...       | ... | ... |
| 8.               | Apoplexy, ..                                      | 24         | 9     | 15      | ... | ... | ... | ... | ... | ... | ... | ... | 1   | 13  | 5   | 5         | ... | ... |
| 9.               | Heart Disease, ....                               | 20         | 6     | 14      | ... | ... | ... | ... | ... | ... | 1   | 3   | 3   | 5   | 7   | 1         | ... | ... |
| 10.              | Disease of Arteries. ....                         | 1          | ...   | 1       | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1         | ... | ... |
| 11.              | Bronchitis, ..                                    | 1          | ...   | 1       | ... | ... | ... | ... | ... | ... | ... | ... | ... | 1   | ... | ...       | ... | ... |
| 12.              | Pneumonia (all forms), ....                       | 6          | 3     | 3       | ... | ... | 1   | ... | 1   | 1   | ... | ... | 1   | ... | 2   | ...       | ... | ... |
| 13.              | Nephritis (Acute and Chronic)                     | 3          | 3     | ...     | ... | ... | ... | ... | ... | ... | ... | 1   | 1   | ... | 1   | ...       | ... | ... |
| 14.              | Diseases of Early Infancy and Malformations, .... | 5          | 2     | 3       | 5   | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ...       | ... | ... |
| 15.              | Suicide, ..                                       | 4          | 3     | 1       | ... | ... | ... | ... | ... | 2   | ... | 1   | 1   | ... | ... | ...       | ... | ... |
| 16.              | Other Violent Deaths, ....                        | 4          | 2     | 2       | ... | 1   | ... | ... | 1   | ... | ... | 1   | ... | 1   | ... | ...       | ... | ... |
| 17.              | Other Defined Diseases, ....                      | 19         | 9     | 10      | ... | ... | ... | ... | ... | ... | ... | 3   | 4   | 6   | 3   | 3         | ... | ... |
| 18.              | Causes Ill-defined or Unknown,                    | 2          | 2     | ...     | ... | ... | ... | ... | ... | ... | ... | 1   | ... | ... | 1   | ...       | ... | ... |
| All Causes, .... |   | 123        | 57    | 66      | 6   | 2   | 3   | 1   | 2   | 2   | 7   | 12  | 16  | 37  | 25  | 10        | ... | ... |

Fifty-nine per cent. of the deaths from all causes occurred in persons over 65 years of age ; 30 per cent. of deaths occurred in the age group 25 to 65 years, while 11 per cent. were among young people under the age of 25 years.

The mean age at death for both sexes in 1929 was 58.1 years. The mean age at death for males was 52.9 years and for females 63.0 years.

*Mean age at death for past seven years.*

| Year.             |            | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 |
|-------------------|------------|------|------|------|------|------|------|------|
| Mean age at death | Both Sexes | 55.8 | 51.0 | 59.1 | 59.7 | 58.3 | 56.5 | 58.1 |
|                   | Males      | 54.9 | 47.4 | 56.1 | 57.3 | 56.4 | 49.0 | 52.9 |
|                   | Females    | 58.8 | 55.5 | 61.6 | 61.8 | 59.4 | 63.2 | 63.0 |

For the years under review, females have lived, on the average, seven years longer than males.

Diseases of the heart and blood vessels were again the chief cause of death, accounting for 37 per cent. of the total deaths. As has been pointed out in previous Reports, however, the high incidence of cardiac deaths bears no direct relation to the health of the community since the majority of deaths from heart disease occur in persons over the age of 65 years as the natural terminal event in healthy lives.

Although cancer was again the principal "killing disease" in the town, fewer persons died of it than in any of the previous seven years. Thirteen per cent. of the total deaths were attributed to that disease. As in previous years more women than men succumbed and no deaths occurred under the age of 35 years. The majority of people died of cancer of the digestive tract.

Infectious diseases accounted for 8 per cent. of the total deaths largely as a result of the influenza epidemic in the first quarter of the year.

Seven per cent. of the total deaths were due to tuberculosis. As compared with the numbers in 1928, an increase occurred in the number of both pulmonary and non-pulmonary deaths.

Respiratory diseases caused 6 per cent. of the total deaths, pneumonia being the principal type of disease.

## ENVIRONMENTAL CONDITIONS.

### Sanitary Conditions.

What of the future of St. Andrews ? It has written a glorious chapter in ecclesiastical and in academic history and of recent years has gained a repute as a golfing centre and place of resort. According to their leanings, people visit St. Andrews, some for brief, others for protracted periods. Clearly the longer people reside within the town, the greater will be the effect upon trade and ultimately on the civic purse. The advent of modern means of transport, however, has tended to curtail the stay of visitors and the University itself is yearly extending its boarding accommodation for its own clientele. Such changes as these will have an increasingly depressing effect upon the income of a large section of the community and in view of its developmental commitments the town cannot afford these losses. Steps will have to be taken to meet them since it is futile to ignore the fact that in a great many homes in St. Andrews, the winter's dinner is provided by the summer's letting and as yet no important measures are being taken to attract greater numbers of resident visitors. One cannot contemplate with equanimity the appearance, in St. Andrews, of all the garish features which characterise modern seaside resorts but much might be done to provide attractions in keeping with the dignity of the ancient city and still in accord with the wants of the holiday makers. For instance the vicinity of the Harbour and the East Sands, an area far removed from the haunts of the scholar and the earnest golfer, lends itself to the development of numerous seaside attractions and recreations.

During the year important improvements were made in the Burgh Sewage system. A new sewer has been laid across the Putting Green at the Bruce Embankment and a large screening chamber has been erected. Since the work was completed no further flooding has occurred in the Links area and the West Sands has been freed from pollution with sewage.

A new sewer, 1566 yards long, has been constructed along the south bank of the Kinness Burn to a screening chamber at the Harbour. This sewer has effected a considerable improvement in the arrangements for sewage disposal in the south side of the town and is adequate to serve the needs of future extensive housing developments.

It was intended that the outfall of the existing sewer should be the outfall of the new sewer. The existing sewer outfall, however, discharges into a lagoon 50 yards from the sea wall at the Harbour. The action of the tide prevents any nuisance from smell but since the outfall is situated above low water mark there are occasions on which the accumulation of sewage forms an unsightly mess to passers by on the popular walk along the sea wall. When the tide is in, currents flow from the outfall to the Castle bathing pond and there is evidence that the pond has been polluted with sewage. For these reasons the Town Council decided to lay a new and larger outfall sewer to a point well below low water mark. Plans for this were completed at the end of the year.

Reference has been made in previous Reports to the inadequate system of sewage disposal existing in the Woodburn Area. At the end of the year the Town Council approved of a scheme whereby the sewage from this area would be pumped up to the higher level of the south side sewer.

In order to cope with the flooding of adjacent property which periodically occurs in times of storm considerable improvements have been effected on the banks of the Kinness Burn along Dempster Terrace. A retaining wall, 400 yards long, and a new roadway were constructed along the south side. Since the work was completed, although the Burn has been in spate, no flooding has occurred.

Fouling of the streets by dogs has been less evident during the year but there is still room for improvement. The number of dog licences decreased in 1929 from 690 to 502.

It is necessary to mention two matters affecting the food supply. There are occasions when one views with uneasy mind the public display in doorways or through open windows of butcher meat and fish. This practice is not so prevalent in Scotland as in England, but little can be said for it from a hygienic point of view.

Fortunately, street improvements have rendered the shopping streets of the town practically free from dust storms. Other dangers, however, remain. Passers-by for instance may contaminate the food and, as has happened, the dust cart may stop a few yards off to gather refuse. One always hesitates to interfere with long established customs, but it is essential that the food supply should be safeguarded. If there are any good reasons for an open air display of food stuffs, these should never be exposed in such a way as to prevent them being suitably protected against contamination.

A second matter requiring attention is the habit of blowing into paper bags in order to open them. This unpleasant practice was referred to in the Report for last year and still continues. It can be prevented by the simple expedient of wetting the fingers on a clean damp sponge kept for the purpose. Customers should refuse to accept provisions in bags which have been blown into by mouth.

### Atmospheric Conditions.

The sunniest month was June, when there were 205·2 hours of bright sunshine, equivalent to a period of 6·8 hours per day. The month with least sunshine was December when there were 20·1 hours of sunshine or 0·97 hours per day. The total amount of sunshine for the year was 1331·6 hours which was more by 57·6 hours than the amount for the previous year.

The warmest month was July, the highest temperature reached being 75 degrees F. The coldest month was February when the lowest maximum day temperature was 27 degrees F. On the night of February 16th the lowest minimum night temperature of the year was registered, namely 10 degrees F. The mean temperature for the whole year was 46·7 degrees F., a figure exactly coinciding with that of the previous two years.

The driest month was March when there was a rainfall of 0·2 inches, while the wettest month was December when there were 4·19 inches of rainfall. The total amount of rainfall for the year was 26·48 inches, 10 inches less than in 1928. The total number of days on which rain fell was 150 and the greatest fall occurred on July 4th, when there were 1·49 inches of rain.



The most prevalent winds were from the west and south west, and the least prevalent from the north and north-east.

The predominant feature of the year was a remarkable fluctuation in temperature and in rainfall. St. Andrews, however, compared favourably with other similar localities in Scotland.

During the year it was found that the sunshine records taken at St. Andrews Meteorological Station, when compared with those of surrounding stations, were not reliable. Encroachments by surrounding buildings had been falsifying results. For this reason, at the end of the year, arrangements were made to move the station to another part of the town.

Commencing from the middle of June daily records were kept of the amount of ultra-violet light reaching the town. The following are average monthly readings, 1 unit being equal to twice the amount of ultra-violet light necessary to produce sunburn.

| <i>Month.</i> | <i>Reading.</i> |
|---------------|-----------------|
| June, ..      | 7.78            |
| July, ..      | 5.64            |
| August, ..    | 3.43            |
| September, .. | 3.08            |
| October, ..   | 1.25            |
| November, ..  | 0.76            |
| December, ..  | 0.79            |

During the summer months St. Andrews held second place to Ardrossan, but during the winter months it had the highest readings in Scotland.

### Offensive Trades.

Slaughtering of cattle, hide factoring and gut and tripe cleaning continue to be the only offensive trades carried on in St. Andrews. No new applications were made during the year.

Meat inspection and general supervision of the work at the slaughter house was carried out in a thoroughly efficient manner by the Veterinary Inspector. All records were accurately kept and a creditable degree of cleanliness in the slaughter house was maintained by the Superintendent.

As was stated in the Report for the previous year, one or two butcher shops in the town are in a more up to date condition than is the municipal slaughter house from which meat supplies are drawn. No great progress, however, was made during 1929 towards the erection of a new or the reconstruction of the old slaughter house. The Town Council entered into various negotiations for a site on which to build a slaughter house in order that they might form a more accurate estimate of the comparative cost of building or reconstruction. No settlement, however, has been reached and the matter is at present in abeyance.

It has already been pointed out that the slaughter house bye-laws are much in need of revision. Pending a decision regarding the slaughter house no steps have been taken towards this, however.

### Housing Conditions.

A sixth development of the Burgh Housing Scheme was completed during the year. The following is the total number of the houses which have now been erected :—

|                              |       |
|------------------------------|-------|
| Two-roomed houses, .. .. .   | 99    |
| Three-roomed houses, .. .. . | 112   |
| Four-roomed houses, .. .. .  | 83    |
| Five-roomed houses, .. .. .  | 12    |
|                              | <hr/> |
|                              | 306   |
|                              | <hr/> |

In May of the present year the register of the Housing Factor was revised and the following number of persons were found to be requiring houses :—

|   |       |
|---|-------|
| Applicants for two-roomed houses, .. .. .                           | 96    |
| Applicants for three-roomed houses, .. .. .                         | 79    |
| Applicants for four-roomed houses, .. .. .                          | 18    |
| Applicants for five-roomed houses, .. .. .                          | 5     |
| Applicants for two or three and four or five-roomed houses, .. .. . | 39    |
|   | <hr/> |
| Total, .. .. .  | 237   |
|   | <hr/> |

This figure is to be taken as an accurate index of the number of applicants for houses.

Although the whole town was not surveyed with a view to ascertaining the exact number of overcrowded and uninhabitable houses there is no reason to believe that a reduction has occurred in the figures given in previous Reports, namely approximately 28 overcrowded houses and 75 defective or uninhabitable houses. The number of houses therefore required to meet the needs of the Burgh is approximately 340.

In the course of the year a systematic inspection of houses was undertaken by the Sanitary Inspector in various areas of the town. With regard to one of them, the Union Street Area, the following report was submitted to the Town Council.

#### IMPROVEMENT OF INSANITARY AREAS.

##### UNION STREET DISTRICT IMPROVEMENT SCHEME.

Report by Medical Officer of Health, Burgh Engineer and Sanitary Inspector.

In compliance with the instructions of the Housing Committee relative to improvement of Insanitary Areas in St. Andrews, we beg to submit the following report :—

There is submitted herewith—

1. Plan A—A section of  $\frac{1}{5000}$  Ordnance Survey Map showing the distribution of Insanitary houses in the vicinity of Union Street.
2. Plan B—A section of  $\frac{1}{12500}$  Ordnance Survey Map showing site of Housing Scheme for dehouseed tenants.
3. Plan C—A section of  $\frac{1}{5000}$  Ordnance Survey Map giving details of suggested reconstruction scheme in Union Street Area.

All the houses, as about to be defined, with the exception of number 12 Union Street, are either unfit for human habitation or their closeness, bad arrangement, want of light, air, ventilation and proper sanitary conveniences are such as to render them injurious to the health of the inhabitants. The district, therefore, forms an Unhealthy Area within the meaning of Part II. of the Housing (Scotland) Act, 1925, and we are of opinion that the most satisfactory method of dealing with the evils connected with it is by means of an Improvement Scheme. At this stage it is not necessary for us to record in full detail the evidence which has compelled us to this decision. The houses show such marks of age in their dilapidation, in their decay and lack of essential adjuncts and appurtenances of a habitable house as clearly to indicate that they have now served their day, and ought to be demolished.

##### *Union Street Area.*

The Union Street area is defined as that area bounded on the north by the northern boundaries of properties 69, 67, 65, 63 and 61 Market Street and 74 North Street ; on the west by part of Union Lane and the western boundary of property 69, Market Street ; on the south by 69, 67, 65, 63,



61, 59, 57 and 55 Market Street, and on the east by Union Street. In this Area there are requiring to be dealt with 3 one-roomed houses, 21 two roomed houses, 5 three-roomed houses and 2 four-roomed houses, making a total of 31 insanitary houses. Within this area there is, also, a disused stable—a building which was adversely reported upon by us in reports to the Town Council early in 1926, and concerning the demolition of which no action was taken.

#### *Insanitary Houses in neighbourhood of Union Street Area.*

In close proximity to the above area there are on the east side of Union Street, two properties (Nos. 3 and 5 Union Street) containing 5 two-roomed houses and 3 three-roomed houses.

It is to be understood that these figures refer only to insanitary dwelling houses, although there are also in the areas defined the following business premises:—one shop used temporarily as office; one shop closed; one newsagent's shop; one dairy shop; one fruiterer's shop; one shoe-maker's shop and one photographer's shop.

#### *Overcrowding.*

In the district under review, allowing 400 cubic feet of air space per person, there are 7 overcrowded houses. On a standard of not more than three persons to a room there are 4 overcrowded houses. Reference has already been made in the Annual Reports of the Medical Officer of Health to the effect of overcrowding on the health of the people. Since it bears no direct relation to this report, it has not been considered necessary at this juncture to measure the social problems which accompany overcrowding, statutory or otherwise, whenever there is indiscriminate housing of sexes, adolescent or adult.

#### *Sublet Houses.*

In the area there are 3 sublet houses.

#### *Housing Requirements.*

The district under review contains 39 dwellinghouses. Housing accommodation will require to be found for the tenants of these, 133 adults and 44 children.

#### *Utilisation of Cleared Site.*

It would be clear from Plan A that if creditable environmental conditions are to be secured, it will be possible to erect fewer dwellinghouses on the ground cleared by the demolition of insanitary houses. In our opinion, the site should not be entirely utilised for the provision of an open space or a playground. A certain number of dwellings should be erected in the cleared ground. In order that the reconstruction scheme may be complete, the shops and stores in the Union Street Area, facing Market Street should be demolished, so that the amenities of the town may be improved by the addition of an area built completely on modern lines. We therefore submit Plan C which indicates the lines on which reconstruction might take place. The scheme will provide a building area, including air space of

0·609 acres and will allow for the erection of 9 houses and at least 5 modern shops, the total being equivalent to 15 houses per acre.

#### *Accommodation for Dehoused Tenants.*

In order to accommodate the 39 dehoused tenants a new Housing Scheme will have to be undertaken. Plan B indicates the suggested site. Provision is made therein for 24 two-roomed and 24 three-roomed houses. It will be observed that the site of the proposed new scheme is the Recreation Park. It may be that good reasons exist against conversion of this ground for purposes of a Housing Scheme, in that case an alternative Plan will be submitted.

It should be pointed out that the Department of Health for Scotland may not approve of the erection of so many two-roomed houses.

In connection with the acquisition of existing properties, differences of opinion are bound to arise regarding their value: We suggest therefore that, should the Town Council approve of the Improvement Scheme, the services of the Government Valuator at Dundee should be obtained.

A statement of the estimated cost of the Scheme was appended to the above Report. In view, however, of a new basis of calculation of grants, compensation and purchase price likely to arise out of the forthcoming Housing (Scotland) Act, 1930, the figures no longer apply and are not reproduced.

### **Town Planning.**

As years pass it is becoming increasingly evident that the day is not far off when the Town Council will require to consider a Town Planning Scheme. A great number of the problems with which the Town Council are now faced have arisen largely from the absence of such a Scheme. Congested slums, obstructive buildings, private premises and erections in undesirable places would not have come into being had a Town Planning Scheme been in operation. Present building bye-laws regulate the height and contiguity of dwelling houses but make no provision against the erection of obstructive premises or buildings unsuited to a locality. Outwith a Town Planning Scheme building bye-laws cannot be amended to prevent deterioration of a residential area except by new and probably highly contentious legislation. A Town Planning Scheme would go far to preserve for all time the natural appearances of the

town and to safeguard the comfort and well-being of many inhabitants. In particular is the Scheme desirable with reference to the future developments of St. Andrews as a popular health resort.

### INFECTIOUS DISEASES.

The total number of notifications made to the Medical Officer of Health was 132. Classified according to disease and compared with the incidence during the previous ten years these were as follows :—

|                                | 1920 | 1921 | 1922 | 1923 | 1924 | 1915 | 1926 | 1917 | 1928 | 1929 |
|--------------------------------|------|------|------|------|------|------|------|------|------|------|
| Smallpox .. ..                 | ..   | 2    | ..   | ..   | ..   | ..   | ..   | ..   | ..   | ..   |
| Typhoid Fever, ..              | ..   | 1    | ..   | 2    | ..   | 1    | ..   | ..   | 2    | ..   |
| Scarlet Fever, ..              | ..   | ..   | 7    | 40   | 90   | 14   | 4    | 10   | ..   | 9    |
| Diphtheria, ..                 | 28   | 11   | 2    | 4    | 5    | 21   | 5    | 7    | 23   | 40   |
| Erysipelas, ..                 | ..   | 4    | ..   | 3    | ..   | ..   | 1    | 1    | 3    | 3    |
| Puerperal Fever ..             | ..   | ..   | ..   | ..   | ..   | ..   | ..   | 1    | ..   | ..   |
| Ophthalmia                     |      |      |      |      |      |      |      |      |      |      |
| Neonatorum, ..                 | 1    | ..   | ..   | ..   | ..   | ..   | 2    | 1    | 1    | ..   |
| Chickenpox, ..                 | 4    | 7    | ..   | 3    | 14   | 5    | ..   | 10   | 11   | 53   |
| Malaria, ..                    | ..   | ..   | ..   | ..   | ..   | ..   | ..   | 1    | 1    | 1    |
| Dysentery, ..                  | 1    | ..   | ..   | ..   | ..   | ..   | 116  | 33   | 2    | ..   |
| Encephalitis Lethargica, ..    | ..   | ..   | ..   | ..   | 1    | 1    | ..   | ..   | ..   | ..   |
| Acute Primary                  |      |      |      |      |      |      |      |      |      |      |
| Pneumonia, ..                  | 1    | 1    | 4    | 1    | 3    | 1    | 2    | 18   | 5    | 2    |
| Acute Influenzal               |      |      |      |      |      |      |      |      |      |      |
| Pneumonia, ..                  | ..   | 3    | 2    | 5    | 4    | 1    | 1    | 2    | 3    | 4    |
| Pulmonary Tuberculosis, ..     | 11   | 7    | 11   | 9    | 6    | 6    | 3    | 12   | 6    | 14   |
| Non-Pulmonary Tuberculosis, .. | ..   | 1    | 2    | 2    | ..   | 2    | 2    | 6    | 3    | 5    |
| Total, ..                      | 46   | 37   | 28   | 69   | 123  | 52   | 136  | 102  | 60   | 131  |

During the past decade three diseases have been more or less constantly present in the Burgh, namely, diphtheria, pneumonia and tuberculosis. Cases of diphtheria have occurred yearly, with increased incidence in 1920, 1925 and 1928-1929.—The incidence of pneumonia and of tuberculosis has been comparatively steady at an approximate rate of 6 and 11 cases per annum respectively. No great reliance can be placed on the figures for chickenpox in

the above Table, since that disease is notifiable only intermittently, depending upon the occurrence of smallpox in Scotland. It became notifiable in March 1927, since when the incidence of the disease has gradually increased to epidemic proportions. An epidemic of scarlet fever occurred in 1924 but of more recent years the number of cases has been comparatively few and the type of the disease extremely mild. No inferences of value can be drawn from a comparison of the yearly total incidence of notifiable infectious diseases since the figures are thrown out of proportion by the occurrence of epidemics. For instance the year in which the highest total of infectious diseases occurred was 1926. In that year an outbreak of dysentery took place and when the number of cases reported is subtracted, 1926 is found to be the healthiest year of the decade so far as the other notifiable diseases are concerned.

The following number of cases was also reported during 1929 :—

|                    |    |    |    |    |     |
|--------------------|----|----|----|----|-----|
| Puerperal Pyrexia, | .. | .. | .. | .. | 1   |
| Measles,           | .. | .. | .. | .. | 1   |
| Influenza,         | .. | .. | .. | .. | 759 |

Puerperal Pyrexia was added to the list of notifiable infectious diseases as from October, 1929. Puerperal Pyrexia is not a disease but merely a term describing the occurrence in a woman of a rise of temperature, persistent or recurring for twenty-four hours, during the period of twenty-one days after childbirth or miscarriage. It is to be distinguished from Puerperal Fever which is a septic infection of a particularly dangerous type. Since, however, the chief early sign of Puerperal Fever is a rise of temperature, the purpose of the Regulations is to ensure that facilities for adequate nursing and treatment are available even for cases whose symptoms are no more than suggestive of septic infection. By this means it is hoped that the present national high maternal death rate will be reduced.

Sixty-five cases of infectious diseases were removed to hospital or other institutions. Classified according to diseases these were as follows, the average stay of patients in the City Hospital being 23 days :—

|                                |    |    | City<br>Hospital. | Other<br>Institutions. |
|--------------------------------|----|----|-------------------|------------------------|
| Scarlet Fever, .. ..           | .. | .. | 8                 | —                      |
| Diphtheria, .. ..              | .. | .. | 37                | 3                      |
| Erysipelas, .. ..              | .. | .. | 2                 | —                      |
| Chickenpox, .. ..              | .. | .. | 1                 | 1                      |
| Acute Primary Pneumonia, ..    | .. | .. | —                 | 1                      |
| Acute Influenzal Pneumonia, .. | .. | .. | —                 | 1                      |
| Pulmonary Tuberculosis, ..     | .. | .. | —                 | 7                      |
| Non-Pulmonary Tuberculosis, .. | .. | .. | 1                 | 3                      |
|                                |    |    | —                 | —                      |
| Total, .. ..                   | .. | .. | 49                | 16                     |

In addition, 6 cases were admitted to the City Hospital for observation. Five of them, living under bad housing conditions, had severe streptococcal infections of the throat and one of them, admitted as a suspected case of scarlet fever, was found to be suffering from influenza. The total number of cases treated in the City Hospital was, therefore, 55.

### *Incidence and Housing Conditions.*

| <i>Disease.</i>                | <i>Size of House.</i> |                       |                         |                        |                                 |
|--------------------------------|-----------------------|-----------------------|-------------------------|------------------------|---------------------------------|
|                                | <i>One<br/>room.</i>  | <i>Two<br/>rooms.</i> | <i>Three<br/>rooms.</i> | <i>Four<br/>rooms.</i> | <i>Five and more<br/>rooms.</i> |
| Scarlet Fever,                 | —                     | 3                     | 3                       | 1                      | 1                               |
| Diphtheria,                    | 2                     | 11                    | 6                       | 8                      | 10                              |
| Erysipelas,                    | —                     | —                     | —                       | —                      | 3                               |
| Chickenpox,                    | —                     | 5                     | 8                       | 6                      | 33                              |
| Malaria,                       | —                     | —                     | —                       | —                      | 1                               |
| Acute Primary<br>Pneumonia,    | —                     | —                     | —                       | —                      | 2                               |
| Acute Influenzal<br>Pneumonia, | —                     | —                     | 1                       | 1                      | 2                               |
| Puerperal<br>Pyrexia,          | —                     | 1                     | —                       | —                      | —                               |
| Measles,                       | —                     | —                     | —                       | —                      | 1                               |
| Pulmonary<br>Tuberculosis,     | —                     | 7                     | 2                       | 4                      | 5                               |
| Non-Pulmonary<br>Tuberculosis, | —                     | 3                     | 1                       | 1                      | 1                               |
| Total,                         | 2                     | 30                    | 21                      | 21                     | 59                              |

It is worthy of note that only 15·5 per cent of cases of infectious diseases occurred in houses erected under the various Town Council Housing Schemes.

### Diphtheria.

An outbreak of diphtheria commencing in September, 1928, and continuing until March, 1929, was described in detail in the Annual Report for 1928. Forty-five individuals were infected. The epidemic was characterised by the comparative mildness of the disease and by the detection of virulent bacilli in the throats of children and adults, who, according to the Schick Test, were susceptible to the disease and who presented symptoms of severe follicular tonsillitis only. Through active co-operation between the general practitioners, the Headmaster and teaching staff of the Burgh Schools and the public health officials the disease was held in check.

So far as is known the Burgh remained free from infection until the end of July, when a boy was found in a moribund condition suffering from malignant diphtheria. He was removed to hospital within half-an-hour but died in spite of intensive serum treatment. He had been ill for five days before medical advice was sought.

There followed in August and September a group of eight cases. The clinical picture of this outbreak was quite different from that of the epidemic previously reported upon. All the cases showed an extensive membranous involvement of the throat, all were sharply ill, some indeed caused anxiety for a day or two.

Three of the cases fell ill together and the only common source of infection was an old sea bathing pool. During a period of warm weather and low tides in August, each had bathed daily in the pool and had swallowed water. The water in the pool had not been changed and it was in a filthy condition as was part of the neighbouring sandy shore. Laboratory investigation of the water was negative so far as *B. diphtheriae* was concerned and it may have been that the infection came from a carrier of the disease who had bathed. There was, however, distinct evidence in the water of the presence of sewage which had probably been



carried by currents during the spell of calm weather from a sewer outfall situated at no great distance. The pool had been much used by bathers and it was ascertained, during the course of the investigation, that several of them had had severe sore throats (not diphtheritic) which they had attributed to swallowing water while bathing. The pool was closed for the remainder of the season.

No further cases appeared in October or November, but in December six cases and two carriers were found. None of the cases were severely ill for the reason that all were diagnosed early since the majority of people with sore throats were now promptly seeking medical advice. Five of the cases had nothing in common as a source of infection. The remaining case and the carriers were schoolgirls at St. Leonards School for Girls.

Since the commencement of the epidemic in September, 1928, 63 cases were notified, 14 of them resistant hosts. These figures cannot be regarded as true indications of the total incidence of the disease in the Burgh. For instance on two occasions in the early months of the epidemic medical advice was sought for the first time only after the onset of palatal paralysis. As in both children there had been a history of sore throats just over a month previously, it is almost certain that they had been suffering from diphtheria. There is every reason for presuming then that, in the first quarter of 1929, there was an appreciable number of undetected cases of mild diphtheria in the town. The situation is not to be regarded as peculiar. Variation in the susceptibility of individuals and in the virulence of bacteria is a recognised feature of infections. That there have been unrecognised carriers in the town is also certain. There cannot have been many of these, however, else the schools would have been much more heavily infected than they were. It is probable, too, that the carrier state in undetected individuals was only of brief and probably in some cases intermittent duration and concerned with bacteria of low virulence. The field covered in the search for carriers was always of considerable extent.

The Burgh has been fortunate in the treatment of carrier cases. None of them proved unduly resistant. In three cases, however, removal of tonsils and adenoids was found to be necessary. All

others, including nasal carriers, cleared up with gargles and paints. A mixture of Hydrarg. Perchlor. and Carbolic Acid taken internally was found to be a useful adjuvant.

### *Scarlatina and Diphtheria Immunisation.*

Sufficient advantage is not yet being taken of the facilities for immunisation against diphtheria and scarlet fever although some mothers have been bringing their children voluntarily to doctors and to the City Hospital for the necessary series of injections. A certain number of children were immunised before the commencement of the epidemic previously described and it is noteworthy that none of these succumbed to the disease, although several of them were definitely exposed to infection. Inoculation against diphtheria is the best modern means of preventing the occurrence of that disease and since facilities are available for all, a heavy responsibility rests with parents if their children become infected. The process is practically painless and is followed by no harmful results. Every child should be immunised, indeed vaccination against smallpox and immunisation against diphtheria might well be done together.

During the year 14 persons received combined protective inoculation against scarlet fever and diphtheria and 10 persons were inoculated against diphtheria.

In any community some people are immune to diphtheria because they have suffered from the disease, others because they have had a mild attack which has passed undiagnosed and others again because they have been immunised. All of these may carry the germs in their throats and may be a danger to non-immune persons, and since the germs of diphtheria are always about, the fewer susceptible persons there are the less will be the chance of illness.

As has been stated one case of diphtheria and two carriers were discovered at St. Leonards School for Girls. The situation which arose at the school served to emphasise the importance of a wholesale immunisation of children. There are well over 300 resident girls and the case was discovered, within a few hours of the onset of the illness, in one house of 36 girls. Every contact



in the house was swabbed and two carriers were discovered. Both of the latter were Schick negative. One of them had previously acquired a natural immunity and had not been in direct contact with the infected case. The other had been artificially immunised and had been associated with the case at work and at play. It is known that among the school population only 19 girls have had a history of diphtheria and only 13 have been immunised. The total number of immune persons, however, is not known, although there are reasons to believe that it is very small. Should a resistant person harbour virulent diphtheria bacilli in her throat, the first evidence of the fact will be the occurrence of cases of diphtheria in the school. In other words, although knowledge of the presence of Schick negative reactors is of value in that it narrows down the search for carriers, in an unprotected community such as the school the knowledge is of value only after the damage has been done. It is a matter of great importance, then, that, every member of a confined school population should be rendered immune, there being more danger in the presence of one or two resistant hosts than in the absence of any.

### Influenza.

In accordance with the scheme existing in St. Andrews of co-operation between the general practitioners and the health officials, information regarding the prevalence and symptomatology of the febrile outbreak of January and February, 1929, was collected by the Clinical Staff of the James Mackenzie Institute for Clinical Research, all the members of whom are in general or special practice in the town and in a position to report upon conditions affecting all sections of the community.

*Onset and Prevalence.*—Isolated cases of an acute febrile illness, termed influenza, appeared in various parts of the Burgh and among all classes between the 7th and 10th January. On 12th January the outbreak assumed moderate epidemic proportions. Subsequently cases continued to appear, the incidence from day to day being remarkably level. Seven hundred and fifty-nine definite cases were reported to the Medical Officer of Health.

Through the courtesy of the Headmaster, information was supplied regarding the number of absentees from the Burgh

Schools. The disease affected the schools a week later than it did the town. On 11th January, 10 per cent. of the school population was absent, a normal figure for winter months. On 18th January, 19 per cent. was absent. On 25th January, 20 per cent. was absent. On 1st February, the outbreak reached its height in the schools when 40 per cent of the children was absent. Thereafter numbers fell gradually, there being 26 per cent. of absentees on 8th February and 20 per cent. on 14th February. It was not until March was well advanced, however, that normal conditions were reached.

*Symptomatology.*—In the majority of cases the onset of the disease was sudden and accompanied, in about 60 per cent. of cases, by shivering. The initial rise of temperature was not marked. The most constant complaints encountered were persistent coughs and severe headaches, aggravated sometimes by movement of the eyeballs. The cough usually commenced 48 hours after the onset of illness but sometimes was later in developing. It was due to an irritative process affecting the upper respiratory tract, was commonly unaccompanied by sputum or signs of involvement of the lungs and proved resistant to all common medications, except inhalations. Muscular aching, especially referred to the limbs, although sometimes to the back and sternum, was moderately prevalent among adults and noticeably absent among children. Abdominal pain was of occasional occurrence. The degree of prostration varied in keeping with the degree of toxæmia present. In some cases it was severe and in a few it was absent. In the majority of cases, however, it was late in developing and out of proportion to the degree of severity of the previous uncomplicated illness.

The most constant feature found on clinical examination was redness and slight congestion of the tonsils, anterior pillars of the fauces and soft palate. Careful examination displayed the presence, in many but not in all cases, of numerous minute glossy pink-white papillae on the surface of the soft palate. Bright red granulations were commonly present on the posterior pharynx. The tongue was frequently furred, termulous, indented with teeth marks and showed enlargement and redness of the papillae

on the sides and tip. (*Vide Reports of St. Andrews Institute of Clinical Research*, Vol. I., p. 148, Vol. II., p. 160, Vol. III., p. 126).

Flushing of the face was present in most cases, in a few even if the cough had not been excessive, the conjunctivae were suffused. A slow pulse was noticed in some cases but was not a common feature. Respirations were quickened. The degree of temperature differed considerably (from subnormal to 104 degrees). In a few cases in the early stages of the disease, a complaint of malaise and a temperature of 102 to 104 degrees, with no clinical condition to account for it, were the sole features of the infection. In other cases clinical manifestations of the disease were pronounced while the temperature was 98·4 degrees or lower.

The acute illness lasted from 1 to 4 days.

The following description applied to a typical uncomplicated case:—Sudden onset of malaise and shivering quickly followed (within 48 hours) by sore throat, headache and a harsh persistent cough with no sputum; a complaint, common in adults, of pain varying in intensity, in the muscles or joints of the limbs or in the lumbar regions. The face was flushed; the palate, the anterior pillars of the fauces and the posterior pharynx were red, congested and covered with papillae, especially in children and young adults; the tongue was furred, flabby, indented and tremulous; the temperature exceeded 100 degrees. After an interval of from 1 to 4 days these manifestations subsided. A varying degree of prostration ensued lasting from 1 to 2 days to a week.

*Incubation Period.*—The incubation period was short, seldom exceeding 48 hours.

*Infectivity.*—The degree of infectivity was not unduly high. The infection of an entire household, even under conditions of overcrowding, was exceptional. It was noticeable that at the commencement of the outbreak, adults, especially young adults, were more severely and more frequently infected than children. Later on more children than adults fell ill but generally speaking the degree of illness among the former remained less than that among the latter.

*Bacteriology.*—Routine bacteriological examinations were made of throat swabs taken from many cases. Results were not con-

clusive. Attempts to isolate *B. pneumosintes* as described by Olitsky and Gates failed. In some instances a bacillus morphologically resembling *Pfeiffer's bacillus* was observed but attempts at culture proved unsuccessful. In other instances *pneumococci* were detected. In the great number of cases, however, a *streptococcus* was found, insoluble in bile, producing a green colouration on blood agar, occasionally appearing as large diplococci varying in sugar reactions and with chains not always reacting uniformly to Gram's stain. Animal experiments were not done and the only conclusion reached was that a pleomorphic *streptococcus* seemed to be related to the infection.

*Complications.*—Involvement of the respiratory tract was of frequent occurrence. Thirty per cent. of cases alone showed evidence of bronchitis, the degree of severity varying. The gastro-intestinal tract was the next in order of frequency to be involved. Suppurative conditions of the middle ear and the nasal antra occurred occasionally. In some cases the nervous system became involved, one case showing definite symptoms of meningismus. In a few cases teno-synovitis followed late in convalescence. Complications occurred almost entirely in persons who, either by choice or by force of circumstances, refrained from going to bed or from remaining in bed for the requisite period.

*Influence of Climate.*—No relationship was established between the outbreak and prevalent climatological conditions but there were indications that fewer cases occurred and that ill persons felt better under conditions of dry frosty weather.

*Mortality.*—Six deaths, equally divided among the sexes, occurred. One child of two years died of acute influenzal pneumonia. The remaining five persons were all over sixty years of age and died of complications affecting the lungs or heart weakened by previous disease. Considering the number of persons infected the death rate was particularly low.

*Treatment.*—None of the usual drugs had any marked effect upon the course of the disease. Preparations, such as aspirin, caffeine, phenazone and salicylates, were more useful in relieving symptoms than in treating the disease *per se*. A mixture of carbolic acid, gr. 1, and liquor hydrarg. perchlor., m.xv., taken

every two hours proved singularly effective in mitigating symptoms and in lessening the risk of complications. Inhalations were of great service in soothing the upper respiratory tract and in easing the cough. In one practice in which no complications occurred, the sole medications were aperients and Mendel's paint applied to the throat.

*Preventative Measures.*—Wherever possible infected persons were isolated but as a rule it was difficult to secure complete quarantine. Visitors were excluded from sick rooms and patients were urged to remain in bed until convalescence had been well established. In view of the comparatively mild nature of the infection it was not deemed advisable to arrange for extensive hospital accommodation for infected cases. A notice was sent to the local press, emphasising the dangers of the outbreak, advising prudence in diet, avoidance of crowds, breathing of fresh air, the use of gargles and immediate retiral to bed on the onset of the first feeling of illness or rise of temperature.

Various prophylactic measures were tried, most of them without success. Persons who had received prophylactic inoculations proved no more resistant to the disease than others. Regular gargling of the throat had some effect in warding off the disease but a group of people whose throats were daily painted with iodine were all attacked.

The measures for protection adopted at St. Leonards School for Girls are worthy of mention. Three hundred and forty girls drawn from all parts of the country and from 6 to 18 years of age are resident in school. As a result of investigation of the temperature of 110 healthy girls, kept under continuous observation for a period of two weeks, it has been demonstrated that the average normal temperature of healthy girls is 97·4 degrees. (*Variations in Pulse and Temperature consistent with Health*, J. H. P. Paton, *Med. Pres. and Circ.*, Sept., 1927.) Temperatures were taken in the school twice daily as a routine. Any girl showing a temperature of 98·4 degrees was seen by the Medical Officer and isolated if papillae on the tongue, papillae on the palate, redness of the palate or catarrhal symptoms were observed. Cases diagnosed definitely as suffering from influenza were



isolated together ; cases in whom the diagnosis was doubtful were kept apart from these. In spite of the fact that girls came to school from stricken areas and obviously suffering from the disease, as a result of these methods only 17 definite and 19 doubtful cases occurred.

*Summary.*—A febrile illness accompanied by cough, headache, congested throat and rise of temperature and affecting some 759 persons was prevalent in St. Andrews during the first quarter of the year. The high incidence, the sudden onset and the marked degree of prostration which followed subsidence of the acute symptoms served to distinguish the disease from the ordinary winter colds but in some cases it was difficult to draw a line of distinction. The comparative absence of fatal result and the comparatively mild course of the disease differentiated the outbreak from the acute epidemic influenza prevalent in 1918-1919. Indeed the disease might have been a severer type of common cold or milder type of acute epidemic influenza. For want of a better name the term "influenza" was used to describe the disease as distinguished from ordinary colds and acute catarrh.

### Chickenpox and Smallpox.

Fifty-three cases of chickenpox were notified during the year. That figure, however, does not indicate the total incidence in the Burgh. It has been ascertained that cases occurred which were not brought to the notice of the general practitioners.

No cases of smallpox occurred in the Burgh but precautions were taken in connection with contacts from infected vessels arriving at Glasgow and South Shields.

A record is still being kept of the number of persons in St. Andrews who make a statutory declaration of conscientious objection to vaccination. As was stated in previous Reports the attention of citizens has been drawn through public notices to the risk to which the town is exposed through the presence of unvaccinated persons, and at the Mother and Child Welfare Centre mothers were urged to have their children vaccinated. As a result a marked fall has taken place in the number of unvaccinated children. Comparing the number of infants, unvaccinated

on account of the conscientious objections of their parents, with the total births in each year, the percentage of unvaccinated infants, during the past twelve years, is as follows :—

| Year.                                 | 1918 | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Percentage of Un-vaccinated Children, | 38   | 20   | 23   | 18   | 20   | 14   | 15   | 13   | 14   | 13   | 11   | 5.5  |

A considerable amount of public attention has been directed during the year to the relation between vaccination and encephalitis. The opinions of medical men have been sought by patients. The following relative notes are therefore, supplied.

Vaccination plays probably some part in the causation of encephalo-myelitis but is not the sole cause. The majority of recorded cases of the disease have occurred in children primarily vaccinated after infancy. English and Dutch accounts and occasional reports from other countries agree in pointing to the age period 3 to 9 years as being the period of greatest susceptibility. It is therefore all the more desirable that vaccination should be carried out early in infancy.

The incidence of the disease is not great. Doerr estimated in 1928 that about 400 cases had been reported in the world during the previous five years. He stated, however, that the number was probably an understatement. During the summer months of 1929 seven fatal cases were reported in England. The following table shows a numerical relation between cases of postvaccinal encephalitis and vaccinations :—

*Age Incidence of Postvaccinal Encephalitis as compared with the Number of Vaccinations. (According to Terburgh).*

|                |                                |
|----------------|--------------------------------|
| Under 1 year.  | 1 case to 27,405 vaccinations. |
| 2 to 3 years.  | 1 case to 22,407 vaccinations. |
| 3 to 6 years.  | 1 case to 2,586 vaccinations.  |
| About 6 years. | 1 case to 2,209 vaccinations.  |

Vaccination of *infants*, then, may be regarded as a safe procedure so far as encephalo-myelitis is concerned. It has been found that the onset of the disease bears some relation to the

amount of vaccine lymph used, *i.e.*, to the size of the reaction at the site of inoculation. To obviate this risk a single linear incision should be made.

### **Pneumonia.**

Six cases of pneumonia occurred during the year, four of them influenzal. Two of the cases were admitted to the Memorial Cottage Hospital; the others were treated at home. As other facilities for the treatment of pneumonia are sufficiently adequate, it has not been considered necessary to provide for the nursing of these cases in the City Fever Hospital.

### **Tuberculosis.**

Nineteen cases of tuberculosis were notified during the year. At the end of the year the total number of persons in the Burgh who were known to be suffering from tuberculosis was 23. Ten were males and 13 females. Six males and 11 females were suffering from tuberculosis of the lungs and 4 males and 2 females from tuberculosis of the abdomen, bones or glands. There were 8 deaths (5 males and 3 females), 6 from infection of the lungs and 2 from infection of the abdomen. Of the 19 cases notified for the first time during 1929, 3 were found not to be suffering from tuberculosis and, it is to be regretted, 7 died.

The increase in the number of cases from St. Andrews admitted to Glenlomond Sanatorium was sustained during the year. At the beginning of the year two St. Andrews cases were in the Institution and during the year seven cases were admitted. Every endeavour is being made to persuade cases of tuberculosis to enter the Sanatorium so that they may acquire and benefit by sanatorium "habits." It is very unfortunate, however, that many patients do not seek medical advice until too late. On this account it is worth while repeating a sentence from the Annual Report for 1928. "If persons who find they are becoming unduly tired, occasionally spitting blood, or suffering from pains in the chest or from bloodlessness were to see a doctor at once for a thorough examination, a great advance would be made in the prevention of tuberculosis."



*Home Visitation.*—The following is a statement of the work done by the visiting Nurse during the year 1st July 1928 to 30th June 1929. Each patient was visited monthly and reports were transmitted to the Tuberculosis Officer and to the general practitioners concerned.

## A.

|  |    |
|--|----|
| Number of cases on the register during the year under review, .. | 36 |
| Number of cases visited, .. .. .                                 | 26 |

## B.

Number of cases not visited and reason.

| <i>Pulmonary.</i> | <i>Non-Pulmonary.</i> | <i>Remarks.</i>               |
|-------------------|-----------------------|-------------------------------|
| 2                 | 1                     | Declined to be visited.       |
| 5                 | —                     | Died soon after notification. |
| 2                 | —                     | Left district.                |
| 9.                | 1                     | Total.                        |

## C.

Number of cases ceased to be visited during the year and reason.

| <i>Pulmonary.</i> | <i>Non-Pulmonary.</i> | <i>Remarks.</i>      |
|-------------------|-----------------------|----------------------|
| 2                 | —                     | Not tuberculous.     |
| 5                 | —                     | Died.                |
| 1                 | —                     | Lost trace of.       |
| —                 | 2                     | Condition quiescent. |
| 8                 | 2                     | Total.               |

## D.

Number of visits made by Nurse.

| <i>Disease.</i>  |    |    |    |    | <i>Cases.</i> | <i>Visits.</i> |
|------------------|----|----|----|----|---------------|----------------|
| Pulmonary,       | .. | .. | .. | .. | 18            | 137            |
| Non-Pulmonary,   | .. | .. | .. | .. | 6             | 41             |
| Non-Tuberculous, | .. | .. | .. | .. | 2             | 10             |
| Total,           | .. | .. | .. | .. | 26            | 188            |

## E.

Environmental Conditions of Cases diagnosed as definitely tuberculous.

1. Sleeping arrangements :—

|                                     |    |    |    |    | <i>Pulmonary.</i> | <i>Non-Pulmonary.</i> |
|-------------------------------------|----|----|----|----|-------------------|-----------------------|
| Sleeping alone,                     | .. | .. | .. | .. | 6                 | 4                     |
| Sleeping alone but sharing bedroom, | .. | .. | .. | .. | 3                 | 1                     |
| Sharing bed,                        | .. | .. | .. | .. | 7                 | —                     |
| Sharing bed and bedroom,            | .. | .. | .. | .. | 2                 | 1                     |
| Total,                              | .. | .. | .. | .. | 18                | 6                     |

## 2. Housing conditions :—

|                              |    |    |    |    | <i>Pulmonary.</i> | <i>Non-Pulmonary.</i> |
|------------------------------|----|----|----|----|-------------------|-----------------------|
| Two rooms, .. .. .           | .. | .. | .. | .. | 7                 | 3                     |
| Three rooms, .. .. .         | .. | .. | .. | .. | 2                 | 1                     |
| Four rooms, .. .. .          | .. | .. | .. | .. | 4                 | 1                     |
| Five rooms and over, .. .. . | .. | .. | .. | .. | 5                 | 1                     |
| Total, .. .. .               | .. | .. | .. | .. | 18                | 6                     |

Although, as compared with conditions in the previous year an improvement has occurred, unsatisfactory sleeping arrangements still exist among too many cases of tuberculosis. The ultimate solution of this problem is bound up in that of the wider problem of inadequate housing conditions in the Burgh.

**Ailments among Panel Patients.**

For the second year a record was kept of the causes of incapacity among 2000 panel patients. Four hundred and eight patients were treated, comprising 229 males and 179 females. In the following table the disorders are classified and the numbers and approximate percentages of people affected are shown :—

| Disorders.            | Both<br>Sexes.<br>per<br>cent. | Males. |              | Females. |              |
|-----------------------|--------------------------------|--------|--------------|----------|--------------|
|                       |                                | No.    | Per<br>cent. | No.      | Per<br>cent. |
| Respiratory, ..       | 24                             | 44     | 20           | 55       | 29           |
| Influenzal, ..        | 21                             | 42     | 18           | 39       | 22           |
| Inflammatory, ..      | 11                             | 34     | 15           | 13       | 7            |
| Accidental, ..        | 11                             | 31     | 14           | 12       | 7            |
| Gastro-Intestinal, .. | 8                              | 22     | 10           | 12       | 7            |
| Infectious, ..        | 6                              | 14     | 6            | 12       | 7            |
| Rheumatic, ..         | 5                              | 12     | 5            | 9        | 5            |
| Circulatory, ..       | 4                              | 7      | 3            | 7        | 4            |
| Bone and Joint, ..    | 3                              | 6      | 2            | 7        | 4            |
| Genito-Urinary, ..    | 3                              | 7      | 3            | 5        | 3            |
| Skin, ..              | 2                              | 6      | 2            | 3        | 2            |
| Nervous System, ..    | 1                              | 4      | 2            | 2        | 1            |
| Endoerino, ..         | 1                              | ..     | ..           | 3        | 2            |
| Totals, .. .. .       | 100                            | 229    | 100          | 179      | 100          |

The chief disorder was again common diseases of the respiratory tract. These include such affections as tonsillitis, quinsy,

bronchitis, asthma, pleurisy and pneumonia. The corresponding figure for both sexes for the previous year was 18 per cent. Influenzal disorders include all manifestations of infection with influenza and since they arose under epidemic conditions are placed in a separate group so as not to distort the figures for respiratory, gastro-intestinal and infectious disorders. Inflammatory disorders include such conditions as cellulitis, abscess formation, carbuncles and such other external suppurative conditions.

Inadequate though most panel records are for purposes of clinical research, a study of them raises many matters of interest. Perhaps one of the chief of these is that, although the country is spending millions in treating and in preventing disease, public health workers are but manœuvring round the outskirts of the main mass of diseases which affect the people. For the safety of the nation those diseases which come within the purview of the Medical Officer of Health should be held in check because, unchecked, they kill or maim great numbers. Now that measures against these diseases have reached a high degree of efficiency, it would seem that the time has come when a definite commencement should be made in the campaign against the common ailments of the people. The National Health Insurance Scheme was originally intended to be a great preventive instrument in this respect. There are grounds, however, for presuming that it has degenerated to a costly means of perpetuating the bottle of medicine. There are other unsatisfactory aspects of the scheme and it is surely becoming more and more clear that the whole organisation is in need of an overhaul. The administration of the Act should be more intimately linked up with the administration of Public Health. The work of the general practitioner should be co-ordinated with that of the Medical Officer of Health. Through concerted efforts arising out of such an arrangement it would be possible properly to investigate the health of the people, it being recognised that no scheme for the prevention of disease can ever be satisfactory or complete unless the general practitioner takes his place as an indispensable link in the chain.

### Venereal Diseases.

The incidence of venereal diseases continues to be low in the Burgh. During 1929 only 2 cases of congenital syphilis, 2 of

tertiary syphilis and 4 of gonorrhoea were seen for the first time by general practitioners or by the Medical Officer of Health. In no cases was infection acquired within the Burgh.

*Treatment.*—Treatment was provided at home, at the special treatment Centre in Dundee, or at the Mackenzie Institute. Thirty-two doses of salvarsan substitute were administered by general practitioners and 20 by the Medical Officer of Health. In view of the difficulties which attend treatment at home, the cases of gonorrhoea were persuaded to undergo treatment in Dundee.

*Laboratory Facilities.*—Under the Fife Combined Venereal Diseases Scheme, Wassermann Reactions were performed in the University College, Dundee. All other examinations were made in the Mackenzie Institute.

## MOTHER AND CHILD WELFARE SCHEME.

### Infantile Mortality.

The number of deaths in infants under 1 year of age was six representing a rate of 55 per 1000 births, calculated on the estimated population to the middle of 1928. The rate in 1928 was 76 per 1000 births. According to age groups the deaths may be classified as follows :—

- (a) Under one week—3 (28 per 1000 births).
- (b) One week and under four weeks—2 (18 per 1000 births).
- (c) Four weeks and under three months—1 (9 per 1000 births).

According to causes of death they may be classified as follows :

|                           |    |    |    |    |   |
|---------------------------|----|----|----|----|---|
| Whooping Cough,           | .. | .. | .. | .. | 1 |
| Premature birth,          | .. | .. | .. | .. | 3 |
| Congenital malformations, | .. | .. | .. | .. | 1 |
| Internal haemorrhage,     | .. | .. | .. | .. | 1 |

In addition to the above 3 premature infants in the 1-4 weeks age group, not resident in St. Andrews died in the ailing babies ward of the Child Welfare Centre.

### Mortality in Children—1-5 years.

Two deaths occurred among children of the 1-5 years age group, one from acute influenzal pneumonia and the other from generalized tuberculosis.

### Births.

The number of legitimate births registered and corrected for transfer was 109, comprising 52 males and 57 females. The number of illegitimate births registered was 7, 3 being males and 4 females. The total number of births notified to the Medical Officer of Health was 109 of which 32 were attended by doctors, 41 by midwives and 15 in maternity nursing wards. There were 2 still births occurring in the practice of doctors. Three infants were born alive prematurely.

### Maternal Mortality.

No deaths occurred in the Burgh in 1929.

### Report under Midwives (Scotland) Act, 1915.

Two Midwives gave notice under Section 18 of their intention to practise inside the Burgh. There were no cases of Ophthalmia Neonatorum or of Puerperal Sepsis, but two cases of Puerperal Pyrexia were reported.

There were 13 cases of emergency, necessitating the calling in of medical practitioners, as follows :—

|   |   |
|---|---|
| Ruptured Perineum, . . . . .                | 6 |
| Delay in first stage of labour, . . . . .   | 1 |
| Delay in second stage of labour . . . . .   | 1 |
| Delay in third stage of labour, . . . . .   | 1 |
| Doubtful Presentation, . . . . .            | 1 |
| Breech Presentation in Primipara, . . . . . | 1 |
| Thrombosed Vein, . . . . .                  | 1 |
| Raised Temperature and Pulse, . . . . .     | 1 |

The calls for medical help were 3 more than those of the previous year. All demands, however, were justifiable.

The arrangements regarding residence of midwives and division of work, described in the Report for 1928, were continued successfully during 1929.

No indication of malpractice occurred in the Burgh during the year and no investigation was called for. The hands, uniforms, equipment and registers of the various midwives were inspected by the Medical Officer of Health.

One of the midwives has been appointed nurse-in-charge of the Ante-Natal Clinic. Expectant mothers are brought to the Clinic by the midwife to consult the doctors of their choice.

### House Visitation.

During 1929, 540 children under 5 years of age appeared on the Register of the Child Welfare Centre as compared with 523 in 1928. Forty children living at a distance in the County were not visited at home, they were all, however, brought to the Centre.

|                          | Number Visited. |    |     | Total Visits. |
|--------------------------|-----------------|----|-----|---------------|
| Infants, .. ..           | ..              | .. | 109 | 1349          |
| Children (1-5 years), .. | ..              | .. | 391 | 1409          |
| Expectant Mothers ..     | ..              | .. | 74  | 334           |
| Total, .. ..             | ..              | .. | 574 | 3092          |

The following figures are applicable to the number of infants on the register reaching the age of 6 months in 1929 :—

|                               |    |
|-------------------------------|----|
| (i) Breast-fed, .. ..         | 64 |
| (ii) Partially breast-fed, .. | 11 |
| (iii) Artificially fed, ..    | 36 |

### Infant Feeding.

| Year.                              | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 |
|------------------------------------|------|------|------|------|------|------|------|------|------|
| Per cent. breast fed, ..           | 59   | 64   | 41   | 62   | 63   | 59   | 66   | 62   | 58   |
| Per cent. partially breast fed, .. | 6    | 6    | 6    | 16   | 4    | 12   | 8    | 11   | 10   |
| Per cent. bottle fed, ..           | 35   | 30   | 33   | 22   | 33   | 29   | 26   | 27   | 32   |

The criterion of success in infant welfare work is a high percentage of fully breast fed infants. Subjected to this test the work done at the St. Andrews Centre merits some criticism. Comparatively, there was less full breast feeding in 1929 than there was in 1921 when the Scheme was inaugurated while the combined percentage of not entirely breast fed and artificially fed infants is greater than it has ever been. The paramount im-



portance of breast feeding is sufficiently well known to require no emphasis and the situation which has obtained in St. Andrews during 1929 calls for remedy.

### **Ante-Natal Consultations.**

Ante-natal consultations are held in a specially equipped room in the James Mackenzie Institute for Clinical Research where expectant mothers are attended by their own doctors. One afternoon per month has been allocated to each general practitioner in the town, thereby allowing for a possible eight sessions per month, the duration of each being in accordance with the number of cases seen.

Forty-eight expectant mothers attended the Clinic (19 of them brought by their doctors and 29 of them brought by the midwife in charge). The total attendances numbered 58. Forty-six of them presented no abnormal features on examination and 2 of them were X-rayed to confirm a diagnosis of breech presentation. Only 1 case required treatment at the Clinic and no cases were referred to the pre-natal ward.

The purposes of the St. Andrews Ante-Natal Scheme is to ensure that every expectant mother is examined by the family doctor and it is significant that, so far as is known, only 10 women did not submit themselves for ante-natal examination.

### **Post-Natal Consultations.**

No special arrangements for post-natal consultations exist in St. Andrews. This work remains in the hands of the general practitioners and in the hands of the midwives who paid 1467 visits during the year in this connection.

### **Child Welfare Consultations.**

#### **I. Child Welfare Centre.**

Clinics were held by Dr. A. Rowand, twice weekly in the Child Welfare Centre, in sessions lasting  $2\frac{1}{2}$  hours each. One hundred

and two sessions were held in 1929, during which 258 children were inspected. The following attendanees were recorded :—

(a) Number of ehildren attending—

|                          |    |    |     |
|--------------------------|----|----|-----|
| (i) Under 1 year of age, | .. | .. | 173 |
| (ii) 1-2 years of age,   | .. | .. | 39  |
| (iii) 2-5 years of age,  | .. | .. | 46  |
| Total,                   | .. | .. | 258 |

(b) Total number of attendanees—

|                          |    |    |      |
|--------------------------|----|----|------|
| (i) Under 1 year of age, | .. | .. | 929  |
| (ii) 1-2 years of age,   | .. | .. | 168  |
| (iii) 2-5 years of age,  | .. | .. | 87   |
| Total,                   | .. | .. | 1184 |

The following visits were paid to the Nurses at the Centre for purposes of direction as to feeding and baby hygiene :—

|                          |    |    |     |
|--------------------------|----|----|-----|
| (i) Under 1 year of age, | .. | .. | 143 |
| (ii) Over 1 year of age, | .. | .. | 103 |
| Total,                   | .. | .. | 246 |

Utilization of the Mother and Child Welfare Organisation has now become the habitual practice of the mothers of St. Andrews. *During 1929 no less than 93 per cent. of the babies—well-to-do and poor—born in the town received the benefit of the services provided.* It is clear that the Organisation has been whole-heartedly accepted by the citizens.

## II. James Mackenzie Institute.

In addition to the above, 77 special clinics, in sessions lasting  $2\frac{1}{2}$  hours each, were held by Dr. Rowand in the James Mackenzie Institute for Clinical Research, for children over two years of age.

(a) Number of ehildren attending—

|                           |    |    |     |
|---------------------------|----|----|-----|
| (i) 2-5 years of age,     | .. | .. | 251 |
| (ii) Over 5 years of age, | .. | .. | 95  |
| Total,                    | .. | .. | 346 |



## (b) Number of attendances--

|                                   |     |
|-----------------------------------|-----|
| (i) 2-5 years of age, .. .. .     | 468 |
| (ii) Over 5 years of age, .. .. . | 175 |
| Total, .. .. .                    | 643 |

It was found necessary during the year to hold, once a week after school hours, a special clinic for older children. Forty-one attended the clinic which opened on September 18th. For the time being this development, which is the natural outcome of the St. Andrews system of following up the life histories of the citizens in health and in disease, has resulted in a certain amount of overlapping with the work of the School Medical Officer. Parents, however, have shown a desire that their children should continue to attend the clinics under the Mother and Child Welfare Scheme and adjustments will be made when the relevant requirements of the scheme arising out of the Local Government (Scotland) Act, 1929, come under consideration.

The illnesses recorded from the various clinics were similar to those described in the Annual Report for 1928. Respiratory troubles were again the main cause of illness and disability among the children. No cases of rickets were discovered. The state of the teeth of the pre-school children was again far from satisfactory. Many parents fail to understand that it is of great importance that deciduous teeth should be cared for and that neglect frequently leads to diseased permanent teeth and ill health. If the provisions of the new Act are to be properly applied much work awaits the school dentists.

### Special Treatment Centres.

As a result of close collaboration between the general practitioners of the town and the Staff of the Child Welfare Organisation it has been found unnecessary to arrange for special treatment-centres. No treatment of any kind is undertaken at the Child Welfare Clinics, with the exception of feeding in the Ailing Babies Ward and there the family doctor may attend the infant if he so desires. Should specialist advice be required, the children are referred to the various departments of the James Mackenzie

Institute or to the Memorial Cottage Hospital. For instance, eye cases are referred to Dr. A. Maitland Ramsay, cases for X-ray examination to Dr. W. F. Mair at the Institute and cases requiring ultra-violet light treatment are referred to the Memorial Cottage Hospital.

### Observation Nursery.

The observation nursery in connection with the Child Welfare Centre provides facilities for infant feeding and hygienic care for both outdoor and indoor patients.

Number of cases attending—

|                          |    | Resident. | Non-Resident. |
|--------------------------|----|-----------|---------------|
| (i) Under 1 year of age, | .. | 8         | 38            |
| (ii) Over 1 year of age, | .. | ..        | 2             |
|                          |    | —         | —             |
| Total,                   | .. | 8         | 40            |
|                          |    | —         | —             |

Number of attendances—

|                          |    |    |      |
|--------------------------|----|----|------|
| (i) Under 1 year of age, | .. | 75 | 1054 |
| (ii) Over 1 year of age, | .. | .. | 27   |
|                          |    | —  | —    |
| Total,                   | .. | 75 | 1081 |
|                          |    | —  | —    |

### Food and Milk Supply.

The number of persons in respect of whom applications were made for milk was—

|                |    |    |    |   |
|----------------|----|----|----|---|
| (i) Mothers,   | .. | .. | .. | 6 |
| (ii) Children, | .. | .. | .. | 7 |

Applications for milk were made by the nurses. All cases were necessitous and the allowance was approved of, on medical grounds, by the Medical Officer of the Centre. Only certified milk was issued. Help in kind was freely given by private individuals. Generous donors presented one necessitous infant with a daily supply of milk and the Centre with its whole supply of cod liver oil.

The community is under a debt of gratitude to Mrs. Younger of Mount Melville. For many years now she has been supplying all the children attending the Burgh Infant Schools with a pint

of milk each day from a tuberculosis free herd. Much has been written of late concerning the beneficial effect of milk as a diet for children. Recently an experiment has been conducted in Glasgow and it has been reported that during the first year of the experiment children receiving milk had shown an increase of 21 per cent. in weight and height over those receiving biscuits, while in the second year the increase in height had been 23 per cent. and in weight 45 per cent. Numbers in St. Andrews are too small to permit of a similar investigation but no doubt exists in the minds of those competent to judge as to the mental and physical improvement which has resulted from the gift of a regular milk supply. The town is indeed fortunate to have such a public spirited benefactor.

### Infectious Diseases.

So far as is known to the general practitioners no case of *measles* occurred among mothers or children in 1929. An outbreak of *whooping cough* of moderate dimensions occurred in the early months of the year. The number of children affected was not recorded. Two deaths occurred at home from respiratory complications. No case of *ophthalmia neonatorum* was reported in 1929.

### Provision for Maternity Cases.

In accordance with the arrangements in existence between the Town Council and the Scores Nursing Home, five necessitous cases were accommodated in the Home either because of bad housing conditions or because of difficulties threatening to attend parturition.

The Memorial Cottage Hospital and the Scores Nursing Home are registered as Maternity Homes under the Midwives and Maternity Homes (Scotland) Act, 1927. The former has available 4 beds in single wards and the latter 6 beds, 3 in one ward, 2 in another and 1 in a third. The arrangements in both institutions were reported upon favourably.

The following information is applicable to the Memorial Cottage Hospital and to the Scores Nursing Home :—

- (1) Pre-natal cases—*nil*.
- (2) Abortions—
  - (a) No. of cases—1
  - (b) Result—Complete recovery.
- (3) Normal Confinements—
  - (a) Total No
    - (i) with medical attendance, .. 14
    - (ii) without medical attendance .. —
  - (b) No. of deaths, .. .. . —
- (4) Abnormal or complicated confinements—
  - (a) Total No.
    - (i) instrumental deliveries, .. 2
    - (ii) other deliveries, .. .. . —
  - (b) Conditions found. Forceps were used on two cases of delayed labour in whom there was no narrowing of the pelvis. In both cases there was a lack of muscle tone.
  - (c) No. of deaths, .. .. . —
- (5) Number of infants born—
  - (i) alive, .. 16
  - (ii) still, .. .. . —
- (6) Number of deaths of infants under 1 week, .. —

### Provisions for Cases of Puerperal Sepsis.

Facilities for the treatment of cases of puerperal sepsis are provided in the City Fever Hospital. No cases, however, occurred in 1929.

Two cases of puerperal pyrexia were reported during the year. In both an elevated temperature persisted for about 60 hours after normal delivery. No assistance was sought from the Local Authority.

### WATER SUPPLY.

The average water consupt during the year was 62·87 gallons daily per head of population. This amount is more than double that reckoned to be adequate for daily use. There can be little doubt but that a great deal of waste of water occurs. The matter

is not of great moment, however, since the water supply of the town is practically unlimited. The continued drought of the summer months of last year greatly reduced the level of Cameron Reservoir but occasioned no anxiety.

Bacteriologically the water remained as reported upon in the previous year. *Bacillus coli* was present in quantities ranging from 10 c.c. to 50 c.c. according to the season of the year.

So far as chemical analysis is concerned, the only point worthy of mention is the hardness of the water. In this country hardness of water is measured in degrees Clark, *i.e.*, in grains of calcium carbonate per Imperial gallon. For the past four years the hardness of St. Andrews water has ranged between  $7\frac{1}{2}$  and  $16\frac{3}{4}$  degrees, but the recent tendency has been towards the lower figure. Water under 4 degrees may be considered soft, exceeding 12 degrees hard so that the water supply of the town is now proceeding more towards the soft than the hard side. The matter is one of considerable economic importance. When the water has a hardness of 10 degrees it uses up 80 grains of soap before a lather can be produced in a gallon of water. That is to say that two-and-a-half hundredweights of soap are wasted every day in St. Andrews when the hardness of the water is 10 degrees Clark.

To remedy the existing system of water purification much work has been accomplished at Pipelands. At the end of the year there were nearing completion a battery of four primary filters, an additional set of four secondary sand filters, a balance tank of 50,000 gallons capacity, between the primary and secondary filters and an additional clear water well. To secure better filtration a large quantity of Arran sand has been laid down as a filtering medium.

The process through which the water supply of the town will pass in future will be as follows. All the water will be drawn from Cameron Reservoir, which has a capacity of 220 million gallons. Water from Lambieetham and Cairnsmill Reservoirs will be used for domestic purposes only in case of extreme emergency but will be drawn from daily for the purpose of irrigation of the Links. The town's water will be conducted from Cameron Reservoir to the four primary filters through which rapid rough filtration will take place. Through the interposed collecting tank the water will

then pass to the twelve secondary fine sand filters. The purified water will then be stored in four large wells of a total capacity of 560,000 before passing on to the town.

In the course of the present year work will have been completed and St. Andrews will undoubtedly be possessed of one of the most up-to-date systems of water purification in Scotland.

## FOOD SUPPLY.

### Milk.

Milk is one of the best of foods and yet it may be one of the most dangerous. Few things hold out such a menace to the health and lives of a community as an unclean milk supply. Germs can find few better breeding grounds than milk and it has been proved beyond doubt that such diseases as infectious sore throat, tuberculosis, diphtheria, scarlet fever, typhoid fever, para-typhoid fever, dysentery, infantile diarrhoea, anthrax and foot and mouth disease are commonly conveyed to human beings by infected milk. A great responsibility, therefore, rests upon dairy workers and too great care cannot be taken to ensure that milk is kept free from contamination. The secret of success is cleanliness which need not be synonymous with costliness. Clean byres, clean cows, clean milkers and clean utensils mean clean milk.

With such considerations as these in mind and in order to help dairy workers to produce clean milk, the Town Council held during the year a Clean Milk Competition. The competition was confined to dairy farms and to dairy shops situated within the Burgh. For six months inspections were made of premises, equipment, animals, utensils and methods. Results of bacteriological examinations of milk samples were issued monthly for the guidance of competitors, and, when inferior, were intended, not as a reflection on individuals but as a hint to the dairymen, the Veterinary Inspector and the Inspector of Dairies as to the source of contamination, so that all might work well together to improve matters.

Eight samples of milk from each competitor were examined—five of them were submitted by the competitors and three of them were taken as “surprise” samples by the Inspector of Dairies.



Generally speaking the quality of the milk examined as regards fat content, bacteriological purity and keeping qualities, was good. Most of the competitors succeeded on one or two occasions in producing a milk which was up to the standard of certified milk. It was observed that when a process of "cooling" was adopted in dairies, the milk was invariably cleaner bacteriologically and kept sweet for a longer period.

Highest marks were scored among dairy farms by St. Nicholas Farm. Among the dairy shops the highest marks were scored by Martin's Dairy, Woodburn Terrace. The successful competitors were each presented with a Cup, the gift of the Provost.

Activities under the Milk and Dairies (Scotland) Act, 1914, are described in the Reports of the Veterinary and the Sanitary Inspectors. Bacteriological and chemical examinations of samples were undertaken by the Medical Officer of Health at the Mackenzie Institute and by the City Analyst, Dundee. During the year 3 specimens were tested for the presence of tubercle bacilli, all with negative result.

There are now four sources from which *certified milk* is sold in the Burgh. It is satisfactory to report that the consumption of graded milk is yearly increasing. Certified milk continues to be supplied to all persons receiving milk in the Institutions and under the various authorised schemes of the Local Authority. The milk consumed in St. Leonards School for Girls is now obtained from a dairy farm, licensed to produce certified milk, and partly from a farm, which, although not so licensed, produces milk which fully conforms with the statutory requirements of certified milk. Some time must elapse before comparisons can be drawn but, so far, there has been a fall in the incidence of sore throats in the School since the introduction of graded milk.

The rate of consumption of milk in St. Andrews is 0.55 of a pint daily per head of population. This rate is higher than the national rate of 0.4 of a pint daily. The ideal to be aimed at is the consumption of a pint per person daily. In striving towards this desirable end, milk producers and retailers must do their utmost to improve the standard of cleanliness and the quality of the milk.

### **Sale of Food and Drugs Acts.**

Samples of butter, mince and sausages were sent to the City Analyst for chemical analysis. One sample of sausages was found to contain Sulphur Dioxide in excess of the amount permitted under the Regulations. The person concerned and all other retailers were warned that a further infringement in the town would lead to prosecution.

### **FACTORY AND WORKSHOPS ACT.**

A statement regarding conditions in the Burgh under the provisions of the Act is supplied in the Report of the Sanitary Inspector. The matters dealt with during the year were mainly concerned with sanitary nuisances.

### **EDUCATIONAL.**

On the 3rd of April, under the auspices of the National Association for the Prevention of Tuberculosis, a lecture, illustrated by cinematograph films, was delivered in the Town Hall by Dr. Harley Williams. Dr. Williams also addressed a group of medical men and a gathering of the Boy Scouts and the Boys' Brigade.

On the 28th November, the Public Health Committee of the Town Council showed a film entitled "Health is Wealth" produced by the New Health Society. By courtesy of the Directors the St. Andrews Cinema House was granted for the occasion.

Addresses were given on health matters by the Medical Officer of Health to juvenile organisations and to the members of the local Rotary Club.

### **LABORATORY SERVICES.**

The following is the number of examinations made in the James Mackenzie Institute in connection with Public Health work in 1929 :—

*Bacteriological and Chemical Examinations.*

|   |    |    |    |    |    | <i>Total.</i> |
|---|----|----|----|----|----|---------------|
| Throat Infections—  |    |    |    |    |    |               |
| Diphtheria, ..  | .. | .. | .. | .. | .. | 587           |
| Scarlet Fever, ..   | .. | .. | .. | .. | .. | 9             |
| Tuberculosis—   |    |    |    |    |    |               |
| Sputum, ..  | .. | .. | .. | .. | .. | 21            |
| Pus, ..   | .. | .. | .. | .. | .. | 2             |
| Urine, ..   | .. | .. | .. | .. | .. | 3             |
| Coli-Typhoid Infections—                                  |    |    |    |    |    |               |
| Agglutinations, ..  | .. | .. | .. | .. | .. | 5             |
| Blood Cultures, ..  | .. | .. | .. | .. | .. | 3             |
| Faeces, ..  | .. | .. | .. | .. | .. | 10            |
| Venereal Diseases—  | .. | .. | .. | .. | .. |               |
| Wassermann Reactions, ..                                  | .. | .. | .. | .. | .. | 27            |
| Gonococcal Examinations, ..                               | .. | .. | .. | .. | .. | 10            |
| Spirochaete Examinations, ..                              | .. | .. | .. | .. | .. | —             |
| General—  |    |    |    |    |    |               |
| Urines for Bacteriological Examination, ..                | .. | .. | .. | .. | .. | 33            |
| Urines for General Examination, ..                        | .. | .. | .. | .. | .. | 474           |
| Throat and Nose Swabs for Organisms, ..                   | .. | .. | .. | .. | .. | 15            |
| Blood Counts, ..  | .. | .. | .. | .. | .. | 1             |
| Blood Cultures, ..  | .. | .. | .. | .. | .. | 3             |
| Faeces for Blood, ..                                      | .. | .. | .. | .. | .. | 4             |
| Faeces for Intestinal Worms, ..                           | .. | .. | .. | .. | .. | 2             |
| Malaria Films, ..   | .. | .. | .. | .. | .. | 5             |
| Biochemical Examinations—                                 |    |    |    |    |    |               |
| Blood Sugar, ..   | .. | .. | .. | .. | .. | 1             |
| Milk, ..  | .. | .. | .. | .. | .. | 24            |
| Bacteriological Examination of Water, ..                  | .. | .. | .. | .. | .. | 12            |
| Bacteriological Examination of Milk, ..                   | .. | .. | .. | .. | .. | 65            |
| Animal Experiments—                                       |    |    |    |    |    |               |
| Guinea Pigs inoculated with Milk for tubercle bacilli, .. | .. | .. | .. | .. | .. | 3             |
| <i>X-Ray Examinations.</i>                                |    |    |    |    |    |               |
| Chests, ..  | .. | .. | .. | .. | .. | 35            |
| Bones, ..   | .. | .. | .. | .. | .. | 2             |
| Pelvis, ..  | .. | .. | .. | .. | .. | 2             |
| Grand Total, ..   | .. | .. | .. | .. | .. | 1358          |

## ANNUAL REPORT OF THE VETERINARY INSPECTOR.

To the Department of Health for Scotland, The Provost,  
Magistrates and Councillors of the Royal Burgh  
of St. Andrews.

Gentlemen.

I have the honour to submit my Annual Report on the work of the Veterinary Department of the Burgh of St. Andrews for the year ending 31st December, 1929.

The work of the Department was concerned with the following :

- (a) Inspections under the Milk and Dairies (Scotland) Act, 1914.
- (b) Inspection of Meat.
- (c) Veterinary Inspection of the Horses in the Cleansing Department.

### (A) MILK AND DAIRIES (SCOTLAND) ACT, 1914.

Attention continues to be paid to the Bye-laws framed under the above Act and much improvement has occurred in the condition of the cowsheds. The personal cleanliness of the milkers was very satisfactory and great care was shown in the process of milking. On the whole the general standard of cleanliness was high.

The cows in the Burgh were inspected monthly and were found to be in a very satisfactory condition.

The cows in the various dairies are mostly young and are kept well groomed, the hair on the quarters, udders and tail being clipped.

A Clean Milk Competition was held during the year on the lines suggested by the Ministry of Health. Cups were presented by the Provost to the successful competitors in the two sections, dairy farms and dairy shops.

The equipment of some of the dairies would be improved by the addition of such modern accessories as coolers and steam boilers.

#### *Registered Dairies.*

The number of dairy farms registered in the Burgh was five, the number of cows sixty.

Fifteen dairies, without the Burgh, supply milk daily to householders, hotels and schools, either by van or by motor lorry. One dairy was closed during the year.

*Fodder and Diet.*

The fodder and diet were of excellent quality.

During the period in which they are housed the cows were well fed, there being an ample supply of turnips, linseed, cotton and other dairy cakes, as well as of hay and straw. During the summer months the supply of grass feeding was very good.

*Health of Cows.*

No case of tuberculosis was reported during the year.

The cows in the Burgh dairy farms are mostly young and are frequently changed. The dairymen are still disinclined to submit their cows to the tuberculin test. Regarding the class of cows in the dairy farms, young Ayrshires and Crosses are in the majority and all are of a good type.

*Offences under Sections 13 and 14 of the Milk and Dairies (Scotland) Act, 1914.*

There were no offences under these sections during the year under review.

*Samples for Examination under Section 21 of the Act of 1914.*

Two samples were taken, the result in each case being negative.

**(B) INSPECTION OF MEAT.***Slaughter House.*

The Superintendent of the slaughter house, who has now completed two years service, has been an efficient worker and most active in notifying any case of disease suspected by him. The booths, courts, pens and pans are kept in a thoroughly clean condition as is the cart used for the removal of offal.

The structural improvements suggested in previous Reports have not yet been accomplished, since no decision has been reached regarding the reconstruction of the old slaughter house or construction of a new slaughter house.

*Inspection of Carcases.*

Detailed records are kept of all cattle, cows, bulls, sheep, lambs and swine found to be diseased.

During the year the following carcases and parts of carcases, to the weight of 2521 lbs., were seized and destroyed as unfit for human food by burial in quick lime. Last year 1701 lbs. were destroyed :—

*Carcases Seized, Wholly and Partially, 1929.*

| Disease.          | Cattle.         |                   | Sheep.         |                   | Calves.        |                   | Swine.         |                   | Total.         |                   |
|-------------------|-----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|----------------|-------------------|
|                   | Seized wholly.  | Seized partially. | Seized wholly. | Seized partially. | Seized wholly. | Seized partially. | Seized wholly. | Seized partially. | Seized wholly. | Seized partially. |
| Tuberculosis, ..  | 1<br>(935 lbs.) | 5<br>(544 lbs.)   | ..             | ..                | ..             | ..                | ..             | ..                | 935 lbs.       | 544 lbs.          |
| Cirrhosis, ..     | 5<br>(67 lbs.)  | 85<br>(491 lbs.)  | ..             | ..                | ..             | ..                | ..             | ..                | 67 lbs.        | 491 lbs.          |
| Distomatosis, ..  | 4<br>(48 lbs.)  | 1<br>(6 lbs.)     | ..             | ..                | ..             | ..                | ..             | ..                | 48 lbs.        | 6 lbs.            |
| Dropsy, ..        | ..              | ..                | ..             | ..                | ..             | ..                | ..             | ..                | ..             | ..                |
| Fever, ..         | ..              | 1<br>(11 lbs.)    | 2<br>(90 lbs.) | ..                | ..             | ..                | ..             | ..                | 90 lbs.        | 11 lbs.           |
| Actinomycosis, .. | ..              | 1<br>(32 lbs.)    | ..             | ..                | ..             | ..                | ..             | ..                | ..             | 32 lbs.           |
| Abscess, ..       | ..              | 14<br>(142 lbs.)  | ..             | 2<br>(12 lbs.)    | ..             | ..                | ..             | 1<br>(11 lbs.)    | ..             | 165 lbs.          |
| Emaciation, ..    | ..              | ..                | 1<br>(40 lbs.) | ..                | ..             | ..                | ..             | ..                | 40 lbs.        | ..                |
| Bruising, ..      | ..              | ..                | ..             | 1<br>(36 lbs.)    | ..             | ..                | ..             | ..                | ..             | 36 lbs.           |
| Not bled, ..      | ..              | ..                | 1<br>(56 lbs.) | ..                | ..             | ..                | ..             | ..                | 56 lbs.        | ..                |
| Total, ..         | 1050 lbs.       | 1226 lbs.         | 186 lbs.       | 48 lbs.           | ..             | ..                | ..             | 11 lbs.           | 1236 lbs.      | 1285 lbs.         |



The class of cattle now slaughtered is much younger and better finished. The sheep and lambs were also of excellent quality. Swine were also younger and of a better type than formerly.

All animals slaughtered at the public abattoir are stunned with the Captive Bolt. I am of opinion that the slaughtermen ought to be employees of the Town Council. Such an arrangement is highly desirable and would obviate a deal of trouble.

During the year, of the 3735 animals slaughtered, 145 carcasses were found to be slightly diseased. These were dealt with after careful examination. The following table shows the number of animals killed during the year and differentiates between the kind of animal killed and the number slaughtered each month :—

*Animals Slaughtered, 1929.*

| Month.      | Cattle. | Cows,<br>&c. | Sheep. | Lambs. | Calves. | Pigs. | Total. |
|-------------|---------|--------------|--------|--------|---------|-------|--------|
| January ..  | 41      | ..           | 12     | 121    | 5       | 25    | 204    |
| February .. | 48      | 1            | 170    | ..     | 1       | 22    | 242    |
| March ..    | 45      | ..           | 159    | ..     | 6       | 19    | 229    |
| April ..    | 57      | ..           | 184    | 31     | 6       | 23    | 301    |
| May ..      | 51      | ..           | 161    | 55     | 4       | 13    | 284    |
| June ..     | 64      | 1            | 115    | 140    | 6       | 14    | 340    |
| July ..     | 83      | 2 (1 Bull)   | 18     | 339    | 12      | 18    | 452    |
| August ..   | 78      | 2            | 21     | 349    | 7       | 12    | 469    |
| September   | 63      | 1            | 8      | 243    | 7       | 18    | 340    |
| October ..  | 69      | ..           | 7      | 219    | 7       | 28    | 330    |
| November .. | 60      | 1            | 8      | 176    | 8       | 35    | 288    |
| December .. | 56      | 2            | 162    | ..     | 2       | 24    | 246    |
| Total ..    | 715     | 11           | 1025   | 1673   | 61      | 251   | 3735   |

**(C) DISEASES OF ANIMALS ACT, 1894.**

Due to the fact that, when the Act was passed, the population of the Burgh was less than 7000, the administration of this Act is under the County Veterinary Inspector.

**(D) VETERINARY INSPECTION OF TOWN HORSES.**

The Town Council have now only one horse which is getting old and will probably have to be replaced soon. The horse meantime is well looked after and fairly healthy.

I have the honour to be,

Gentlemen,

Your obedient Servant,

PETER YOUNG, M.R.C.V.S.,

*Veterinary Inspector.*

## REPORT BY SANITARY INSPECTOR.

To the Department of Health for Scotland, The Provost,  
Magistrates and Councillors of the Burgh of  
St. Andrews.

Gentlemen,

### ANNUAL REPORT, 1929.

In accordance with the provisions of Section 15 of the Public Health (Scotland) Act, 1897. I have the honour to present my Ninth Annual Report on the work of the Sanitary Department within the Burgh of St. Andrews, for the year ending 31st December 1929.

On the 27th December 1929, a Circular (Public Health Circular No. 10, 1929) was issued by the Department of Health for Scotland in which Sanitary Inspectors were called upon to give in their Annual Reports :—

(a) A general account of the sanitary state of the Burgh. This account should deal specifically with water supply, drainage (including sewage disposal) and scavenging, and with any suggestions for the improvement of these services. It should also deal with nuisances and other matters affecting the public health. The report should show the number (if any) of closets on the conservancy system that have been converted to the water-carriage system during recent years, and the number of privies, earth-closets, and privy middens remaining at the end of the year, etc.

(b) An account of his general inspections, and of any special inspections or enquiries, including the supervision of slaughter houses and other offensive trades, and the sanitary condition of schools and of factories and workshops.

(c) An account of the condition of the common lodging-houses.

(d) An account of the condition of the burial-grounds.

(e) An account of his proceedings under the Burgh Police Act.

(f) Observations on food inspection, unsound food, and particulars of the sanitary conditions of premises where foods are manufactured, prepared, stored, or exposed for sale.

(g) A report on the work done by the Local Authority under the Sale of Food and Drugs Acts, the Public Health (Preservatives, etc., in Food) Regulations, and the orders relating to milk.

(h) Where the Sanitary Inspector has been appointed to carry out the sanitary inspection of registered cowsheds and exempted premises).

- (1) A statement of the conditions found, and of any particular points that are of outstanding interest or that require remedy.
- (2) Particulars of the extent to which (a) the cowsheds comply with the structural and sanitary requirements of the Dairy Bye-laws; (b) dairymen and their employees conform with the requirements of the Bye-laws relating to methods of milking, handling, and generally the production of clean milk;
- (3) Notes of improvements obtained in the condition of dairies, including observations regarding any complaints received or dealt with;
- (4) (a) The number of registered dairies in the district and the approximate number of cows therein; (b) the number of cowsheds exempted from registration (if available) and the approximate number of cows in such cowsheds, with observations on this class of cowshed;
- (5) A statement of the extent to which Articles 5 to 16 of the Milk and Dairies (Scotland) Order, 1925 are being complied with;
- (6) A comparative statement of the results of inspection of dairies.

### A—WATER SUPPLY.

The water supply of St. Andrews is obtained from reservoirs outwith its Burgh Boundary. There are three reservoirs of which the largest (Cameron Reservoir) is situated about 5 miles from St. Andrews. The next in size is Lambieletham, which lies about 3 miles from the Burgh while the smallest reservoir, Cairnsmill, is situated  $1\frac{1}{2}$  miles away. The main supply is obtained from Cameron Reservoir which has a cubic capacity of 37,680,000 cubic feet and holds 222,000,000 gallons of water. The cubic capacities and volume of the others being as follows:—Lambieletham having a cubic capacity of 2,080,000 and containing 13,000,000 gallons

and Cairnsmill with a cubic capacity of 60,000 and containing 3,750,000 gallons of water. The total volume of the reservoirs is, therefore, 238,750,000 gallons.

In these reservoirs precipitation of the inorganic matter in suspension takes place before the water is conducted to the Filters. In the Filters the organic matters in suspension are eliminated from the supply and after passing through the filters the water is led to the still wells where it remains for a period prior to entering the mains for distribution in the Burgh.

The area of the Filtering medium at present is as follows :—

|  |    |    |                 |
|--|----|----|-----------------|
| High Filters 4 at 980 sq. feet,              | .. | .. | 3,920 sq. feet. |
| Low Filters, 4 at 950 sq. feet,              | .. | .. | 3,800 sq. feet. |
| New Filters built in 1927, 4 at 1000 sq. ft. |    |    | 4,000 sq. feet. |
|  |    |    | <hr/>           |
|  |    |    | 11,720          |

which giving a rate of filtration of 4 inches per hour and provided the entire filtering area is in operation at one time, will be capable of passing 586,000 gallons of water per day of 24 hours. Assuming the population of the Burgh to be 10,000 this is equivalent to 58·6 gallons per head per day.

There are at present in course of construction 4 filters each of which will have a filtering area of 1000 sq. feet. In addition to these there are 4 Primary Filters in course of construction, and also an additional clean water well having a capacity for 150,000 gallons.

On the following pages are abstracts of the water filtered during the past 19 years (1911-1929) together with an abstract of the water passing through the filters during each month of 1929. From this abstract it will be noted that the average daily consumpt per head of population was 62·87 gallons.

## ST. ANDREWS WATER.

Abstract of Consumpt of Water Filtered at Pipeland Filters.  
Years 1911-1929.

| Year. | Total Consumpt. | Average<br>per day. | Average<br>per month. | Average<br>per head. | Cameron.<br>Inches. | Rainfall<br>Pipeland.<br>Inches. | Rain<br>Days. |
|-------|-----------------|---------------------|-----------------------|----------------------|---------------------|----------------------------------|---------------|
| 1911, | 121,392,300     | 332,812.85          | 10,116,025            | 41.59                | ..                  | 18.95                            | 170           |
| 1912, | 136,199,500     | 372,076.72          | 11,349,958            | 46.50                | ..                  | 27.93                            | 180           |
| 1913, | 141,001,700     | 386,281.75          | 11,750,141            | 48.28                | ..                  | 24.38                            | 172           |
| 1914, | 139,544,700     | 382,314.24          | 11,328,725            | 47.79                | ..                  | 21.10                            | 180           |
| 1915, | 132,682,500     | 418,308.22          | 12,723,541            | 52.28                | ..                  | 32.68                            | 185           |
| 1916, | 157,959,700     | 432,766.30          | 13,163,308            | 54.09                | 43.75               | 38.85                            | 204           |
| 1917, | 155,841,200     | 426,962.16          | 12,986,736            | 53.37                | 24.51               | 20.94                            | 166           |
| 1918, | 156,302,200     | 428,252.60          | 13,026,016            | 53.53                | 26.81               | 24.92                            | 177           |
| 1919, | 152,451,400     | 417,675.06          | 12,704,283            | 32.22                | 30.16               | 26.52                            | 172           |
| 1920, | 161,043,600     | 440,009.83          | 13,420,300            | 55.00                | 30.02               | 26.91                            | 185           |
| 1921, | 157,227,000     | 429,581.96          | 13,100,200            | 47.73                | 24.42               | 22.00                            | 156           |
| 1922, | 161,520,900     | 441,040.71          | 13,460,075            | 47.42                | 24.40               | 27.23                            | 181           |
| 1923, | 181,272,700     | 496,637.53          | 15,106,058            | 52.83                | 28.96               | 27.23                            | 203           |
| 1924, | 178,209,800     | 486,912.02          | 14,850,816            | 51.25                | 34.10               | 31.85                            | 185           |
| 1925, | 216,163,400     | 592,228.49          | 18,013,616            | 62.33                | 30.34               | 27.05                            | 154           |
| 1926, | 253,879,300     | 695,556.98          | 21,156,608            | 69.55                | 37.13               | 34.76                            | 190           |
| 1927, | 229,988,500     | 630,106.43          | 19,165,700            | 63.00                | 33.58               | 31.61                            | 188           |
| 1928, | 220,094,900     | 601,352.18          | 18,341,200            | 60.13                | 37.76               | 35.36                            | 203           |
| 1929, | 229,477,830     | 628,706.38          | 19,123,152            | 62.87                | 28.97               | 24.64                            | 150           |



**ST. ANDREWS WATER.**  
**Abstract of Monthly Consumpt of Wate: Filtered at Pipeland 1929.**

| Date.         | Upper Filters | Lower Filters. | Total Consumpt<br>Gallons. | Pipeland.<br>Inches. | Rainfall<br>Cameron<br>Inches. |
|---------------|---------------|----------------|----------------------------|----------------------|--------------------------------|
| January, ..   | 13,104,000    | 4,119,500      | 17,223,500                 | 1.12                 | 1.21                           |
| February, ..  | 13,401,000    | 4,373,800      | 17,774,800                 | 1.18                 | 1.74                           |
| March, ..     | 15,004,000    | 5,254,500      | 20,258,500                 | .20                  | .40                            |
| April ..      | 13,085,000    | 4,553,900      | 17,638,900                 | 1.40                 | 1.63                           |
| May, ..       | 13,705,000    | 5,803,200      | 19,508,200                 | 2.49                 | 2.64                           |
| June, ..      | 14,253,000    | 5,783,580      | 20,036,580                 | 1.27                 | 1.30                           |
| July, ..      | 14,734,000    | 6,314,760      | 21,048,760                 | 3.05                 | 3.48                           |
| August, ..    | 14,181,000    | 6,110,720      | 20,291,720                 | 3.58                 | 4.48                           |
| September, .. | 13,597,000    | 5,086,800      | 18,683,800                 | .64                  | .76                            |
| October, ..   | 14,199,000    | 5,256,360      | 19,445,360                 | 1.73                 | 2.78                           |
| November, ..  | 13,495,000    | 5,086,800      | 18,581,000                 | 3.79                 | 4.29                           |
| December, ..  | 13,847,000    | 5,138,910      | 18,985,910                 | 4.19                 | 4.26                           |
|               | 166,605,000   | 62,882,830     | 229,477,830                | 24.64                | 28.97                          |

|                              |              |              |          |
|------------------------------|--------------|--------------|----------|
| Average consumpt per day, .. | 229,477,830  | = 628,706.38 | gallons. |
|                              | 365          |              |          |
| " " per month, ..            | 229,477,830  | = 19,123.152 | "        |
|                              | 12           |              |          |
| " " per head, ..             | 229,477,830  | = 62.87      | "        |
|                              | 365 x 10,000 |              |          |

## A—DRAINAGE.

In my report of last year reference was made to a scheme then in course of preparation for improving the outfall sewer at the Bruce Embankment, and that particulars regarding it would be included in this report.

The following extracts from the Engineer's report dealing with this work fully explains the scheme and are as follows :—

“ The drainage area of the Burgh is a little over 500 acres. The Northern Area has an acreage of 281 while that of the Southern Area is 232 acres.

It has been observed recently that a good deal of faecal matter discharged from the sewer has been finding its way on to the West Sands. As you are aware steps were taken in the early part of the summer to deal with this matter and a temporary screen was installed in the Manhole Chamber at the Bruce Embankment. While it was not expected that all the faecal matter would be eliminated, the screen has served a very useful purpose in reducing the nuisance from this Outfall to some extent, but there is another source from which this nuisance arises and that is the Southern Drainage Outfall which discharges on the Foreshore into a sort of lagoon well above low water mark and about 50 yards east of the Sea Wall near the Bell Rock Tavern. In this case the faecal matter and other solids at, or near, the time of low water are left on the shore round about the Outfall pipe, and on the return of the tide they are carried west and no doubt ultimately come to rest on the West Sands.

The Main Outfall Sewer at Bruce Embankment was designed to discharge during most favourable conditions, viz. :—at low water, 624 cubic feet per minute. From observations which have been made gaugings have been noted when during exceptional rainfalls, 2900 cubic feet has been discharged. On this occasion the volume was accounted for as follows :—

|   |
|---|
| 2150 cubic feet from Manhole at Putting Green.    |
| 400 cubic feet from Outfall Sewer.                |
| 352 cubic feet from Overflow at Bruce Embankment. |

---

|       |      |          |
|-------|------|----------|
| Total | 2902 | say 2900 |
|-------|------|----------|

On a recent occasion in the month of July last a gauging was noted which shewed the following results. There was also on this occasion, an overflow from the Manhole on Putting Greens.

|  |
|--|
| 840 cubic feet ex Manhole Putting Green. |
| 471 cubic feet ex Outfall.               |
| 352 cubic feet ex Overflow.              |

---

|        |  |
|--------|--|
| Total, | 1663 cubic feet per minute, say, 1600. |
|--------|--|

Under these conditions very serious flooding takes place on the south side of the Links, and the buildings along the Links from the Marine Hotel west are all more or less affected.

This flooding and the occasional overflows from the Manholes on the Putting Green and Granny Clark's Wynd is caused by a rather serious congestion in the Manhole at the Putting Green. At this particular Manhole the Sewage and Storm water accruing from the Northern Area concentrate and enter the Manhole by way of a 2 feet 6 inch by 1 foot 6 inch egg-shaped sewer which takes the most populous part of the Burgh and by two 15 inch pipes, one of which provides for the City Road district of the Burgh and the other for the Suburban Area in the South West. The pipe leading from this Manhole to the Screening Chamber at the Bruce Embankment is only 20 inches in diameter having a gradient of 1 in 107 as against 1 in 20 on the 2 feet 6 inch by 1 foot 6 inch egg-shaped sewer. The concentration of the Storm Water from the most impervious part of the area is so sudden and coming up against a rising tide it has no alternative but overflow from the Manhole and at the same time dam back and flood the low lying area at the Sands.

The only remedy for this condition of matters is to lay a new pipe from the Manhole to the Screening Chamber, and it is also proposed to eliminate the two 15 inch pipes from the existing Manhole and to couple them up to a new one to be constructed adjoining the existing one. The 21 inch pipe will then be laid direct to the Screening Chamber. In order, however, to provide for this additional discharge at the Screening Chamber, it will be necessary, without duplicating the Outfall pipe to low water level, to construct a high level overthrow about 3 inches above the level of high water which will discharge into a 30 inch diameter outlet pipe to be laid for a distance of 50 lineal yards out from the Sea Wall.

In addition to this precaution which will work automatically, I propose to instal a 42 inch Penstock which will come into operation during exceptionally heavy rainfall. The sill of this Penstock will be fixed at the level of 25·28 as against 26·28 on the invert of the Manhole at the Links at entrance to Granny Clark's Wynd. This arrangement will prevent any darning back in the sewer should a downpour occur at or about the time of half tide and will give relief to the sewers when the tide is approaching the high water level.

In order to eliminate the faecal matter entirely from the discharge at the Outfall pipes, it is proposed to erect two Screens of an improved pattern as shown on the Drawings. One Screen, the principal one, will have a basket arrangement which will intercept all faecal matter and paper, the other Screen will be erected in front of this one or on the up side and will be what is known as a lock Screen. Before the Basket Screen is raised the lock Screen will be dropped into position to prevent solids, etc., from passing to the Outfall. It is hoped by the application of two strong jets of water under pressure, to break up and liquify all faecal matter before it is returned to the Sewer."

In addition to the foregoing a new main intercepting sewer for the Southern Area of the Burgh has been laid 1164 feet of which is 18 inches in diameter, 1050 feet 21 inches in diameter, 682 feet 24 inches in diameter and 1762 feet 30 inches in diameter. Where this sewer crosses the Kinness Burn a syphon chamber with twin syphons, 18 inches stone overflows and penstock chamber for cutting off sewage from the syphons, has been erected.

The drainage systems of all new houses erected in the Burgh during the year were subjected to examination and testing before the tracks were filled in. All defects found were made good before the system was passed.

### A—SCAVENGING.

*Collection of Refuse.*—The collection of household refuse in the Burgh is undertaken by a 7 cubic yard S.D. Freighter and 2 horses and carts. The system worked satisfactorily throughout the year and the collection of refuse is completed each day by noon at latest.

*Cleansing.*—For cleansing purposes the Burgh is divided into districts and one man employed in each district. His duties include the cleansing of streets, gulleys and water channels and also assisting with the work of refuse collection during the forenoon. This system has also been found satisfactory during the past year.

### A—NUISANCES.

Deposits of refuse, etc., behind business premises and adjacent to dwellings. The accumulation was, upon instructions being given, removed and no further complaint received.

Flat roof over dwellinghouse defective and the house in consequence of these defects was damp. Visited premises, and instructed repairs to be undertaken. These were carried out and no further complaints received.

Shopkeepers in neighbourhood of proposed Parking Place for cabs and buses in business centre directed attention to the possibility of a nuisance arising in the event of horses and cabs standing in this stance for any length of time. It was pointed out that the Cleansing Department would in the ordinary course of scavenging the district remove any manure deposits, and that

from this point of view no question of such a nuisance would arrive. The proposed stance was, however, turned down owing to the risk of congestion to the traffic to which it might give rise.

Complaint received *re* store premises used for storing rags and bones, etc. Instructed store to be cleared and to discontinue its use for such articles in future. This was done and since then there has been no further complaint.

Pollution of atmosphere by sulphur dioxide in neighbourhood of butcher's premises. The pollution was caused by the carelessness of the man engaged in overhauling the freezing plant not having the piping sufficiently long to reach the water level in the trap in consequence of which the gas escaped into the atmosphere instead of being dissolved in the water. The matter was taken up with the butcher and also with the firm of Engineers whose man was engaged in overhauling the plant. There have been no further complaints of this nature, but the one dealt with here caused very considerable inconvenience in the neighbourhood at the time.

Complaint from tenant of dwellinghouse regarding the trap in the scullery floor of his house and the smells which it give rise to. Directed attention to the matter and had the trap in question closed up. There has been no further complaint.

Tenants of tenement in neighbourhood of harbour, depositing refuse over wall at foreshore. The matter was taken up with the tenants. Twenty-seven letters sent out regarding it.

Complaint from householder regarding flies. Visited premises with Medical Officer of Health and found flies in house in great numbers. It appeared that the attraction was the food in the house. Advised certain precautions to be taken which evidently were successful as no further complaint was made.

Complaint *re* scraps of food and waste matter deposited on the flatted part of the roof of a dwelling lodged by the proprietor's agents. Visited premises and found that since receipt of complaint and my visit—a matter of about 1 to 2 hours—the roof had been cleaned and no trace of any objectionable matter could be seen. The tenant in question was written to regarding the complaint and there has been no repetition of it so far.



Complaint lodged against butcher's premises in which it was stated that the back of the premises were used for tripe cleaning. Upon investigating this complaint it proved to be without foundation. The attention of the butcher was, however, directed to the fact that it was illegal to make use of the premises for such work without the sanction of the local authority.

Accumulation of ashes, etc., deposited alongside of public walk. Visited locality adjacent to which is situated a number of small dwellinghouses. After various enquiries the accumulation was traced to come from one source, the author of which was written to and the practice terminated immediately thereafter. There has since been no further complaint.

Complaint from tenant regarding condition of ceilings in her house, parts of which had fallen and though proprietor had been notified no action was taken to repair the damage. Visited premises and found complaint justified and that the whole ceiling was more or less in a dangerous condition. Instructed proprietor to repair it. Before this was done, however, the tenant had secured another house. There has been no further complaint *re* this matter.

## HOUSING.

In connection with the survey of houses in the Burgh, particulars regarding the following matters are noted.

1. The general structural condition of the walls, roof, floors, joisting and woodwork generally, and the condition of the water and drainage fittings, rhones and rain water conductors.
2. The extent to which any dampness prevails in the walls or elsewhere.
3. The adequacy of under floor ventilation openings.
4. The sufficiency of lighting and ventilation of the house, including the adequacy of the windows and the height of the ceilings, regard being had to whether such lighting and ventilation are deficient because of adjoining houses or buildings.
5. The cleanliness of the house.



6. The number of apartments in the house and the adequacy of these for the number, age, and sex of the persons occupying it.
7. The adequacy of the w.e. accommodation and whether such accommodation is common to two or more families.
8. The provision of scullery, sink, bath, larder, coal store, press accommodation and facilities for washing and drying clothes.
9. The nature and adequacy of the water supply to the house. Whether water has been introduced to the house if the supply is not from a public supply ; the arrangements for preventing the contamination of the supply.
10. The nature and adequacy of the arrangements for the disposal of the drainage, etc., from the house in the absence of a public sewerage scheme.
11. The paving, drainage and sanitary condition of any yard or outhouse belonging to or occupied with the dwelling house.
12. The arrangements for the deposit of refuse and ashes.
13. The existence of any room which would in pursuance of Section 12 of the Housing (Scotland) Act, 1925, be a dwellinghouse so dangerous or injurious to health as to be unfit for human habitation.
14. Any other defects or conditions that may tend or render the dwellinghouse dangerous or injurious to the health of an inhabitant.

Upon the completion of the survey of one of the worst areas in the Burgh a joint report was prepared by the Burgh Engineer, Medical Officer of Health and Sanitary Inspector, and transmitted to the Town Council.

There are eight dry closets in the Burgh, two at cottar's houses four at a factory and one at a motor depot.

Those at the factory and motor depot are within the area upon which a scheme for improvements in the system of drainage will be undertaken in the near future when it is the intention to bring these dry closets into the water carriage system.

One hundred and thirty-five houses obtain their supply of water from outside. The supply is generally obtained from a tap on staircase landings or outside the properties.

In the Burgh there are 114 water closets used by two tenants, 48 water closets used by three tenants, 31 water closets used by four tenants, 6 water closets used by five tenants and 2 water closets used by six tenants.

During the year an additional Development to the Housing Scheme was put in hand. This Development known as the Sixth Development provided for 48 houses of two apartments. The houses were of the flatted type, there being four houses to each block of buildings. At the end of the year 44 of the houses were completed and occupied.

At the end of 1929, the number of houses erected by the Town Council (including the 15 houses at Abbey Court and South Court) properties) is as shown in the undernoted Table :—

| <i>Development.</i>    | <i>Houses occupied at end of year.</i> |        |        |        | <i>Houses in course erection.</i> |        |        |        | <i>Totals</i> |
|------------------------|--|--------|--------|--------|-----------------------------------|--------|--------|--------|---------------|
|                        | 2 rms.                                 | 3 rms. | 4 rms. | 5 rms. | 2 rms.                            | 3 rms. | 4 rms. | 5 rms. |               |
| First Development, ..  | Nil                                    | 20     | 36     | 12     | Nil                               | Nil    | Nil    | Nil    | 68            |
| Second Development, .. | Nil                                    | 32     | 18     | Nil    | Nil                               | Nil    | Nil    | Nil    | 50            |
| Third Development, ..  | Nil                                    | 36     | 15     | Nil    | Nil                               | Nil    | Nil    | Nil    | 51            |
| Fourth Development, .. | 24                                     | Nil    | Nil    | Nil    | Nil                               | Nil    | Nil    | Nil    | 24            |
| Fifth Development, ..  | 20                                     | 20     | 10     | Nil    | Nil                               | Nil    | Nil    | Nil    | 50            |
| Sixth Development, ..  | 44                                     | Nil    | Nil    | Nil    | 4                                 | Nil    | Nil    | Nil    | 48            |
| Abbey Court, .. ..     | 2                                      | Nil    | 3      | Nil    | Nil                               | Nil    | Nil    | Nil    | 5             |
| South Court, .. ..     | 2                                      | 2      | 1      | Nil    | Nil                               | Nil    | Nil    | Nil    | 5             |
| 42 South Street, ..    | 3                                      | 2      | Nil    | Nil    | Nil                               | Nil    | Nil    | Nil    | 5             |
| Totals, ..             | 95                                     | 112    | 82     | 12     | 4                                 | Nil    | Nil    | Nil    | 306           |

The question of the water closets in the houses of the 2nd, 3rd, 4th and 5th Developments of the Housing Schemes was looked into during the year and arrangements made with the manufacturers to have 3 new closets fitted into certain houses in order that comparison might be made between the results from these closets with the former ones. This experiment is continuing.

As requested, I furnish herewith, a copy of the Return transmitted to the Department of Health on 11th January 1930.

**Name of Local Authority.—ST. ANDREWS TOWN COUNCIL.**

Report for the year ended 31st December 1929, on proceedings taken as regards the Inspection, Improvement and Closure of Dwelling Houses.

**A.—Housing (Inspection of District) Regulations (Scotland) 1928.**

- |   |  |
|---|--|
| 1. Number of dwellinghouses inspected.  | Sixty-two.   |
| 2. Number of dwellinghouses which on inspection were considered to be in a state so dangerous or injurious to health as to be unfit for human habitation.                                     | The Local Authority are considering the question of undertaking an Improvement Scheme in an area in which the majority of the houses inspected are situated. |
| 3. Number of representations made to the Local Authority with a view to the making of closing orders.   | See answer to question 2.  |
| 4. Number of dwellinghouses in respect of which closing orders were made.   | Nil.   |
| 5. Number of dwellinghouses the defects in which were remedied without either the making of closing orders or the service of notices under Section 3 (1) of the Housing (Scotland) Act, 1925. | Nil.   |
| 6. Number of dwellinghouses which after the making of closing orders were put into a fit state for human habitation.  | Nil.   |

**B. Housing (Scotland) Act, 1925.**

- |  |   |
|--|---|
| 1. Number of dwellinghouses in respect of which notices were served under Section 3 (1).                                 | Nil.  |
| 2. Number of dwellinghouses rendered fit for human habitation under Section 3 (1).                                       | Nil.  |
| 3. Number of dwellinghouses in respect of which closing orders were deemed to have become operative under Section 3 (1). | Nil.  |
| 4. Number of dwellinghouses rendered fit for human habitation by the Local Authority under Section 3 (2).                | Nil.  |
| 5. Number of cases where intimations were given under Section 20 (1) as to insufficient water-closet accommodation :     | This subsection deals with Districts other than Burghs. |

- |  |          |
|--|----------|
| (a) cases where requirements complied with by owners.                                  | (a) Nil. |
| (b) cases where works carried out by Local Authority after failure of owners to do so. | (b) Nil. |
| (c) cases still pending.   | (c) Nil. |
6. Number of houses of (a) one apartment and (b) two apartments for the erection of which the consent of the Local Authority has been given in terms of Section III.
- |          |   |
|----------|---|
| (a) Nil. | (b) None, apart from the erection of 48 two-roomed houses comprising the 6th Development of St. Andrews Housing Scheme. |
|----------|---|

### C. Housing, Town Planning, etc. (Scotland) Act, 1919.

1. Number of cases where notices were served under Section 40 (1) to provide dwellinghouses with water supply :—
- |  |          |
|--|----------|
| (a) cases where requirements complied with by owners.                                  | (a) Nil. |
| (b) cases where works carried out by Local Authority after failure of owners to do so. | (b) Nil. |
| (c) cases still pending.   | (c) Nil. |

*Note.*—Any general information or observations as to the character or defects usually found to exist, as to the extent to which overcrowding was found to prevail and the steps taken to remedy it, or as to the work of inspection generally, should be entered in the space below :—

(Signed) JOHN ROSS,  
Designated Officer,  
Town Hall Buildings,  
St. Andrews.

Date, 11th January 1930.

### B—GENERAL INSPECTION.

The lands of St. Nicholas Farm were kept clear of tents during the year. It may be remembered that in former years numerous tents were pitched on these lands and owing to the lack of sanitary accommodation the sea beach adjacent to them was frequently fouled. The prohibition to pitch tents on these lands was much desired and now that it has received attention improved conditions of the beach followed.

Various articles of wearing apparel, deposits of rubbish, carcasses of dogs, etc., have been removed from different parts of the Burgh during the year. The clothing had presumably been discarded by vagrants, and was after removal destroyed by fire. The carcasses of dogs were buried.

### SLAUGHTER HOUSE.

The projected reconstruction, etc., of the Slaughter House is still under review but so far nothing definite has been decided. The premises contain cattle courts, killing booths with tripe and hide depots adjacent. The entire premises are efficiently cleaned and kept in excellent order by the Superintendent.

#### Slaughter of Animals (Scotland) Act, 1928.

This Act, which came into operation on 1st January 1928, requires that persons engaged in the slaughtering of animals must be licensed within the District of the Local Authority and that all animals other than swine must be instantaneously slaughtered or instantaneously rendered insensible to pain until death supervenes by means of a mechanically operated instrument in proper repair and of a type approved by the Local Authority. Sheep were excluded from the terms of the Act until 1st October 1928.

The mechanically operated instruments employed in the Slaughter House here are "Cash" Captive Bolt Pistols. There are four of these instruments provided by the Local Authority—two large Cash Pistols for large animals and two small Cash Pistols for sheep. The Local Authority also provide the cartridges for use in the pistols. These are in the custody and are under the supervision of the superintendent who gives them out on request to the holders of the licences under the Act. A charge of 3d for each large animal and 1d for each small animal being made. This system is found to work satisfactorily and the costs of the scheme at the end of the year were as follows:—Expenditure, £20 9s 6d; income, £13 4s 9d, showing a debit balance of £7 4s 9d. Included under the item Expenditure is the sum of £12 11s representing the cost of the pistols purchased during the year. As these pistols will serve for some time the income from the scheme will be found to be adequate to cover the working costs of it.

At the close of the year there were 5 holders of licences to slaughter and stun animals in the Burgh in terms of this Act.

The two offensive trades conducted in the slaughter house premises—Tripe Boiler and Hide and Tallow Factory—were throughout the year conducted in a satisfactory manner, and no complaints were received regarding either of them during the year.

### INFECTIOUS DISEASE.

During the year the undernoted cases of Infectious Diseases were notified :—

Scarlet Fever, 9 ; 8 of which were admitted to the City Hospital.  
Diphtheria, 40 ; 37 of which were admitted to the City Hospital  
and 3 treated at other Institutions.

Erysipelas, 3 ; 2 of which were admitted to City Hospital.

Chickenpox, 53 ; 1 of which was admitted to City Hospital, 1  
treated at another Institution.

Malaria, 1.

Acute Primary Pneumonia, 2 ; none of which were admitted to  
City Hospital, 1 treated at another Institution.

Acute Influenzal Pneumonia, 4 ; none of which were admitted to  
City Hospital, 1 treated at another Institution.

In addition to these, the undernoted cases were reported of  
which 6 were admitted to Hospital for treatment :—

Cystitis, 1.

Puerperal Pyrexia, 1.

Tonsillitis, 3 ; 3 admitted to Hospital.

Septic Rash, 1 : 1 admitted to Hospital.

Septic Throat, 1 ; 1 admitted to Hospital.

Nasal Catarrh, 1 ; 1 admitted to Hospital.

In the report of the Medical Officer of Health reference has been made to the condition of a bathing pool and its suspected connection with one or two cases of diphtheria. Upon attention being directed to this pool immediate steps were taken to have it overhauled, and it was closed for the remainder of the year.



Following immediately upon removal of patients to Hospital articles of clothing, and bedding, when necessary, are removed for steam disinfection, and in addition the disinfecting of the room or rooms occupied by the patient, prior to their removal, to Hospital is carried out. Further information regarding Infectious Diseases in the Burgh during the year is contained in the report of the Medical Officer of Health.

## **B—SCHOOLS.**

The cleanliness of the Schools within the Burgh is satisfactory.

The following is a copy of my report to the Clerk to the School Management Committee for Madras College, to which I have so far had no reply :—

“ 26th March 1929.

C. L. P. Grace, Esq.,  
Solicitor.

Dear Sir,

### **Madras College.**

I submit herewith for the consideration of the Management Committee a report upon the sanitary fittings in Madras College.

The sanitary fittings throughout, with the exception of the Kindergarten Department are of very old make, and, though kept clean are so constructed as not to permit of every part being thoroughly cleansed. The iron troughs in the Boys and Girls Cloak Rooms should be dismantled and a number of separate wash-hand basins installed. The basins should be of good modern make and provided with adequate provision against overflow; fitted with taps and plugs complete. The lead waste-pipe from these should be trapped on the inside (the trap being fitted with cleansing screw), and should discharge into a fireclay trap situated on the outside of the building.

The type of water closets at present in use should also be removed and an adequate number of wash-down water closets, each provided with flushing cisterns and pulls complete should be fitted into separate compartments. The closets should have adequate water seals and be provided with ventilation shaft. Each of the compartments should have a door with a slip bolt fitted in the inside, and the door so hung as to be a few inches clear of the concrete floor.

The number of wash-hand basins and closets to be provided for the boys and girls should be such as to adequately meet the requirements of the number of pupils in the School. On the 11th February 1929, I learned from the Headmaster that 165 boys and 132 girls, exclusive of the Kindergarten Department, were in the College.

*Kindergarten Department.*—The type of water closet provided for the Boys in this Department should be dismantled and a number of individual water closets, complete with flushing cisterns and pulls provided. These closets should be in separate compartments.

The 3 water closets provided for the girls in this Department are not partitioned off from each other, nor do they have independent flushing cisterns. Partitions should be provided and flushing cisterns complete with pulls supplied for each closet.

Glazed fireclay stall urinals should also be provided in place of the existing arrangements for the boys in both departments of the College.

The sanitary fittings for the use of the Staff (which on the 11th February 1929 numbered 10 male and 12 female teachers) should also be looked into.

Provision has been made for one-water-closet for the female staff. This enters off the Ladies Cloakroom, which is situated on the first floor of the Kindergarten Department and ventilates into the cloakroom. The closet in my opinion, should be so situated and constructed as to comply with Section 251 of the Burgh Police (Scotland) Acts, 1892-1903.

The water-closet in the Cloakroom provided for the male staff appears to be defective at the base.

The provision of additional wash-hand basins for the use of the staff might also be considered.

Yours faithfully,

(Signed) JOHN ROSS, A.R.San.I.

## **B—FACTORIES AND WORKSHOPS.**

Visits to the Factories and Workshops within the Burgh were carried out during the year and investigations into the cleanliness and sanitary arrangements of the premises were made. The prevailing conditions are on the whole satisfactory. The following matters however, called for attention during the year.

Hood for gas iron heater called for during 1928 was provided early in 1929.

Water closet walls to be cleaned down.

Walls of staircase and passage to be cleaned down and particulars entered into general register.

Water closet to be cleaned.

Walls to be repaired and limewashed.

These various matters were attended to within a reasonable period after attention had been directed to them.

### C—COMMON LODGING HOUSES.

There are no Common Lodging Houses within the Burgh.

### D—BURIAL GROUNDS.

There are two burial grounds within the Burgh and one outside the Burgh boundary for the Burgh's requirements.

The Burial Grounds within the Burgh have been kept in good order throughout the year and no complaints regarding either of them were received.

### E—PROCEEDINGS UNDER THE BURGH POLICE (SCOTLAND) ACT.

Under Section 246 of the Act a Proprietor of property situated in the Burgh was served with a notice to provide one modern type of wash down water closet, having suitable floor underneath same and suitable partitions erected. After various communications and interviews this work was duly accomplished.

It was found necessary to serve on various proprietors or their agents, notices under Section 242 of the Act to clear and repair choked drains and water closets. The time given to have this work done varied from one to two days. In all cases the matters were attended to.

### F—OBSERVATIONS ON FOOD INSPECTIONS, Etc.

During the year 31 samples of milk were drawn for and submitted to the City Analyst for analysis. Of this number 28 were non-graded milks and 3 were graded. Of the 3 graded milks 2 were "Certified Milk" and 1 Pasteurised.

The undernoted are the details of the Analyst's Reports on the above non-graded milks.

| No. | Total   | Fat. | Non-Fatty | Remarks.     |
|-----|---------|------|-----------|--------------|
|     | Solids. |      | Solids.   |              |
| 1.  | 12.28   | 3.30 | 8.98      | Genuine.     |
| 2.  | 12.50   | 3.65 | 8.85      | do.          |
| 3.  | 12.44   | 3.43 | 9.01      | do.          |
| 4.  | 12.00   | 3.20 | 8.80      | do.          |
| 5.  | 12.94   | 4.31 | 8.63      | do.          |
| 6.  | 11.94   | 3.17 | 8.77      | do.          |
| 7.  | 12.98   | 4.00 | 8.98      | do.          |
| 8.  | 10.44   | 2.87 | 7.57      | Not Genuine. |

| <i>No.</i> | <i>Total</i>   |             | <i>Non-Fatty</i> |  | <i>Remarks.</i> |
|------------|----------------|-------------|------------------|--|-----------------|
|            | <i>Solids.</i> | <i>Fat.</i> | <i>Solids.</i>   |  |                 |
| 9.         | 13·66          | 4·22        | 9·44             |  | Genuine.        |
| 10.        | 13·02          | 3·92        | 9·10             |  | do.             |
| 11.        | 12·10          | 3·20        | 8·90             |  | do.             |
| 12.        | 12·54          | 3·63        | 8·91             |  | do.             |
| 13.        | 12·46          | 3·70        | 8·76             |  | do.             |
| 14.        | 12·68          | 3·77        | 8·91             |  | do.             |
| 15.        | 11·82          | 2·88        | 8·94             |  | Not Genuine.    |
| 16.        | 13·36          | 4·12        | 9·24             |  | Genuine.        |
| 17.        | 12·34          | 3·60        | 8·74             |  | do.             |
| 18.        | 12·38          | 3·31        | 9·07             |  | do.             |
| 19.        | 12·30          | 3·07        | 9·23             |  | do.             |
| 20.        | 12·38          | 3·80        | 8·85             |  | do.             |
| 21.        | 13·36          | 4·40        | 8·96             |  | do.             |
| 22.        | 11·60          | 3·05        | 8·55             |  | do.             |
| 23.        | 12·32          | 3·72        | 8·60             |  | do.             |
| 24.        | 12·81          | 3·81        | 9·00             |  | do.             |
| 25.        | 13·32          | 4·35        | 8·97             |  | do.             |
| 26.        | 11·92          | 3·13        | 8·79             |  | do.             |
| 27.        | 12·44          | 3·32        | 9·12             |  | do.             |
| 28.        | 12·58          | 3·43        | 9·15             |  | do.             |
| Totals,    | 348·71         | 100·36      | 248·92           |  |                 |
| Average,   | 12·45          | 3·58        | 8·89             |  |                 |

From the foregoing it will be observed 2 samples (numbers 8 and 15) were below the required standards. These cases were duly reported to the Town Council when it was decided to warn the sellers in both cases. Those measures were effective in bringing about an improvement in the supply, as the following will show. The milk in one case improved from 2.87 per cent. Fat to 3.92 per cent., and in the other from 2.88 per cent. Fat to 3.37 per cent. It may also be seen from the foregoing that approximately 54 per cent of the samples submitted contained an increase in the Fat content required varying from 20 per cent. to 46 per cent., and that 21 per cent. of the samples submitted contained over 4.0 per cent. of Fat or over  $33\frac{1}{3}$  per cent. of the fixed standard.

From the table compiled by the City Analyst for the year ending 31st October 1929. It may be seen that the Grand average for the Counties and Towns in Fife was :—

|                   |    |    |    |                |
|-------------------|----|----|----|----------------|
| Fat,              | .. | .. | .. | 3.49 per cent. |
| Non-Fatty Solids, | .. | .. | .. | 8.82 do.       |

In this table the average for St. Andrews over that period was—

|                   |    |    |    |                |
|-------------------|----|----|----|----------------|
| Fat,              | .. | .. | .. | 3.61 per cent. |
| Non-Fatty Solids, | .. | .. | .. | 8.86 do.       |

The milk supply of St. Andrews was therefore 0.12 per cent. above the Grand Average for the County and Towns in Fifeshire.

*Graded Milks.*—Throughout the year the following samples of graded milk were submitted for chemical and bacteriological examination with the results as indicated :—

*Pasteurised Milk—*

|                             |    |    |    |                       |
|-----------------------------|----|----|----|-----------------------|
| Fat,                        | .. | .. | .. | 3.43 per cent.        |
| Non-Fatty Solids,           | .. | .. | .. | 8.73 per cent.        |
| Number of colonies per c.c. | .. | .. | .. | 73,200.               |
| Bacillus Coli Communis.     | .. | .. | .. | Absent in 1/10th c.c. |

*Certified Milk—*

|                              |    |    |    |                       |
|------------------------------|----|----|----|-----------------------|
| Fat,                         | .. | .. | .. | 3.51 per cent.        |
| Non-Fatty Solids,            | .. | .. | .. | 8.87 per cent.        |
| Number of colonies per c.c., | .. | .. | .. | 3,400.                |
| Bacillus coli Communis,      | .. | .. | .. | Absent in 1/10th c.c. |

*Certified Milk—*

|                              |    |    |    |                       |
|------------------------------|----|----|----|-----------------------|
| Fat,                         | .. | .. | .. | 3.56 per cent.        |
| Non-Fatty Solids,            | .. | .. | .. | 8.72 per cent.        |
| Number of colonies per c.c., | .. | .. | .. | 7,800.                |
| Bacillus Coli Communis,      | .. | .. | .. | Absent in 1/10th c.c. |

All of which were certified by the Analyst to be genuine.

In addition to the foregoing, samples of butter, mince and sausages were submitted for analysis.

In one case the sausages contained 119 parts sulphur dioxide per million in excess of the standard prescribed by the Public Health (Preservatives, etc., in Food, etc.). This case was duly reported to the Town Council who decided to warn the butcher.

## G—SALE OF FOOD AND DRUGS ACTS.

The foregoing Section includes the particulars regarding the analysis of the samples procured during the year.

## H—COWSHEDS.

The undernoted tables furnish the particulars contained in the various Registers on 1st January 1928 and 31st December 1929.

| Description   | On Register<br>at 1/1/1928 | Removed<br>during<br>year | Added<br>during<br>year | On Register<br>at 31/12/29 | Remarks            |
|---|----------------------------|---------------------------|-------------------------|----------------------------|--------------------|
| <i>Non-Graded Milk.</i>   |                            |                           |                         |                            |                    |
| Wholesale Producers<br>within Burgh, ..   | 1                          | ..                        | ..                      | 1                          |                    |
| Retail Producers with-<br>in Burgh, ..  | 4                          | 1                         | ..                      | 3                          |                    |
| Dairy shops within<br>Burgh, .. ..  | 3                          | ..                        | ..                      | 3                          |                    |
| Occupiers of premises<br>outwith Burgh but<br>selling milk within<br>Burgh, .. .. | 11                         | 2                         | 4                       | 13                         |                    |
| Totals, ..  | 19                         | 2                         | 4                       | 20                         |                    |
| <i>Graded Milk.</i>   |                            |                           |                         |                            |                    |
| Retailed in Burgh by<br>Producers outwith<br>Burgh, .. ..                         | 2                          | ..                        | ..                      | 2                          | Certified<br>Milk. |
| Dairy Shops within<br>Burgh, .. ..  | 1                          | ..                        | ..                      | 1                          | Do.                |
| Tea Room within<br>Burgh, .. ..   | 1                          | ..                        | ..                      | 1                          | Do.                |
| Totals, ..  | 4                          | ..                        | ..                      | 4                          |                    |

All premises have been on the whole well conducted and the standard of cleanliness in them has been of a high order. Much care has been taken by most occupiers of dairy farms in the Burgh to see that the milkers' overalls and caps are kept clean and that the udders are washed immediately prior to milking. During the course of the Clean Milk Competition points regarding the cleanliness of handling of the milk, etc., were gone over with the various competitors and these were generally given effect to.

There are no points of outstanding interest that require remedy in any of the dairy premises within the Burgh.

The dairies comply both on structural and sanitary grounds with the Dairy Bye-laws; and dairymen and their employees



conform with the requirements of the Bye-laws relating to methods of milking, handling and in the general with production of a clean milk.

No complaints were received during the year about any dairy premises and the improvements brought about during the previous year have brought the various premises up to a good order so that what principally remains to be done is periodical cleaning and limewashing of the premises. This work is well done, in fact in one byre in the Burgh limewashing was carried out each month. The number of registered dairy farms in the Burgh are 4, and in which a total number of 49 to 51 cows are housed. There are no dairy premises in the Burgh exempted from registration. The provisions of Article 5 of the Milk and Dairies (Scotland) Order, 1925, are complied with. The provisions of Article 16 of the Order was specially drawn to the attention of the various dairy-men who now give effect to its requirements. In point of fact each person registered in the Burgh is supplied with a copy of this Order so that they have no reason for not carrying out the duties imposed on them by it. The inspections made of the various premises in the Burgh reveal that the occupiers and their employees are now fully alive to the necessity for keeping their premises up to the standard laid down by the Local Bye-laws framed under the Milks and Dairies (Scotland) Act, 1914, and are doing their best to comply with these.

### H—DAIRIES, Etc.

During the year a Clean Milk Competition was held. The Competition was conducted on the lines laid down by the Ministry of Agriculture and Fisheries in their Publication No. 43—Guide to the Conduct of Clean Milk Competitions, Third Edition. There were two classes in the Competition, one for Dairies and one for Dairy Farms in the Burgh and it is interesting to note that all dairymen and dairy farmers entered.

Throughout the period of the Competition—February to June—all premises were visited each month by the Veterinary Inspector and Sanitary Inspector, and marks awarded under the various divisions. The divisions in the two classes and the maximum marks that could be gained under them are as follows :

**Dairy Farms.**

| <i>Divisions.</i>                          | <i>Maximum Marks<br/>Awarded.</i> |
|--|-----------------------------------|
| Food and Water, .. .. .                    | 6                                 |
| Accommodation for Cows at Milking Time, .. | 32                                |
| Accommodation for handling Milk ..         | 13                                |
| Utensils (Construction and Repair), ..     | 49                                |
| Health of Cows, .. .. .                    | 100                               |
| Cows (Cleanliness), .. .. .                | 75                                |
| Cowsheds, .. .. .                          | 28                                |
| Milkroom, .. .. .                          | 35                                |
| Utensils (Care and Cleanliness), ..        | 125                               |
| Milking, .. .. .                           | 55                                |
| Handling of Milk, .. .. .                  | 82                                |
| Sediment Test, .. .. .                     | 100                               |
| Keeping Quality Test, .. .. .              | 300                               |
| Bacterial Count, .. .. .                   | 300                               |
| Coliform Organisms, .. .. .                | 200                               |
| Totals, .. .. .                            | 1500                              |

**Dairies.**

| <i>Divisions.</i>                      | <i>Maximum Marks<br/>Allowed.</i> |
|--|-----------------------------------|
| Water, .. .. .                         | 4                                 |
| Accommodation for handling Milk, ..    | 13                                |
| Utensils (Construction and Repair), .. | 49                                |
| Milkroom or Dairy, .. .. .             | 35                                |
| Utensils (Care and Cleanliness), ..    | 125                               |
| Handling Milk, .. .. .                 | 77                                |
| Sediment Test, .. .. .                 | 100                               |
| Keeping Quality Test, .. .. .          | 300                               |
| Bacterial Count, .. .. .               | 300                               |
| Coliform Organisms, .. .. .            | 200                               |
| Totals, .. .. .                        | 1203                              |

Sterilized bottles were supplied to the Competitors by the Medical Officer of Health and each competitor submitted for examination a sample of milk each month. In addition to these, however, 3 surprise samples were drawn officially and submitted for analysis.

It is interesting to note that on several occasions the milk samples submitted were found to be equal to Certified Milk both chemically and bacteriologically. There were other cases where the milk submitted was found to be very bad from the point of cleanliness.

Each Competitor was given a Code number. This code number was known only to the Public Health Officials conducting the Competition. The following tables show the position of each competitor throughout the period of the Competition.

Table I.—Dairy Farms.

| Month. | Nature of Sample Submitted. | Possible Marks. | COMPETITORS.   |                       |          |                |                       |          |                |                       |          |                |                       |          |                |                       |          |
|--------|-----------------------------|-----------------|----------------|-----------------------|----------|----------------|-----------------------|----------|----------------|-----------------------|----------|----------------|-----------------------|----------|----------------|-----------------------|----------|
|        |                             |                 | A.             |                       |          | B.             |                       |          | C.             |                       |          | D.             |                       |          | E.             |                       |          |
|        |                             |                 | Marks Awarded. | Per Cent. Each Month. | Results. | Marks Awarded. | Per Cent. Each Month. | Results. | Marks Awarded. | Per Cent. Each Month. | Results. | Marks Awarded. | Per Cent. Each Month. | Results. | Marks Awarded. | Per Cent. Each Month. | Results. |
| Feb.   | Ordinary Round.             | 1400            | 1082.5         | 77.3                  | 3rd      | 1045.25        | 74.7                  | 4th      | 775.25         | 55.4                  | 5th      | 1168.0         | 83.4                  | 1st      | 1137.25        | 81.2                  | 2nd      |
| Mar.   | do.                         | 1500            | 1318.75        | 87.9                  | 1st      | 912.75         | 60.8                  | 4th      | 792.25         | 52.8                  | 5th      | 1127.25        | 75.1                  | 2nd      | 882.25         | 58.8                  | 3rd      |
| Mar.   | Surprise Round              | 1600            | 1458           | 91.1                  | 1st      | 898            | 56.1                  | 4th      | 606            | 37.8                  | 5th      | 966            | 60.3                  | 2nd      | 918            | 57.3                  | 3rd      |
| Apr.   | Ordinary Round              | 1400            | 1236.75        | 88.3                  | 1st      | 1108.75        | 79.2                  | 2nd      | 1008           | 72.0                  | 5th      | 1015.5         | 72.5                  | 4th      | 1230.75        | 87.9                  | 3rd      |
| May    | do.                         | 1500            | 1130.75        | 75.38                 | 1st      | 967.75         | 64.51                 | 4th      | 1098           | 73.2                  | 3rd      | 1135.25        | 75.68                 | 2nd      | 864.75         | 57.65                 | 5th      |
| May    | Surprise Round              | 1600            | 1165           | 72.81                 | 1st      | 1084           | 67.75                 | 4th      | 868            | 54.25                 | 5th      | 1091           | 68.18                 | 2nd      | 1002           | 62.62                 | 3rd      |
| June   | Ordinary Round              | 1500            | 768.75         | 51.25                 | 3rd      | 422            | 28.0                  | 5th      | 942            | 62.8                  | 2nd      | 1051.25        | 70.08                 | 1st      | 637.75         | 42.51                 | 4th      |
| June   | Surprise Round              | 1600            | 808            | 50.5                  | 1st      | 390            | 24.37                 | 5th      | 480            | 30.0                  | 3rd      | 590            | 36.87                 | 2nd.     | 412            | 25.75                 | 4th      |

Final Results—Competitors A., First ; D., Second ; E., Third ; B., Fourth ; C., Fifth.

Table II.—Dairies.

COMPETITORS.

| Month. | Nature of Sample Submitted. | F.              |          |                       | G.       |          |                       | H.       |          | Final Results.          |
|--------|-----------------------------|-----------------|----------|-----------------------|----------|----------|-----------------------|----------|----------|-------------------------|
|        |                             | Possible Marks. | Awarded. | Per Cent. Each Month. | Results. | Awarded. | Per Cent. Each Month. | Results. | Awarded. |                         |
| Feb.   | Ordinary Round              | 1103            | 844      | 76.5                  | 2nd      | 1035     | 93.8                  | 1st      | 785      |                         |
| Mar.   | do.                         | 1203            | 311.5    | 25.8                  | 3rd      | 1094     | 90.9                  | 1st      | 883.5    |                         |
| Mar.   | Surprise Round              | 1600            | 16       | 1                     | 3rd      | 1234     | 77.1                  | 1st      | 718      |                         |
| Apr.   | Ordinary Round              | 1103            | 859.5    | 77.9                  | 2nd      | 1064.5   | 96.5                  | 1st      | 767.5    | G. First.               |
| May    | do.                         | 1203            | 747.5    | 62.13                 | 2nd      | 930.5    | 77.34                 | 1st      | 305      |                         |
| May    | Surprise Round              | 1600            | 554      | 34.63                 | 2nd      | 442      | 27.62                 | 3rd      | 805      | H., Second<br>F. Third. |
| June   | Ordinary Round              | 1203            | 415.5    | 34.53                 | 3rd      | 825.5    | 68.62                 | 1st      | 574.5    |                         |
| June   | Surprise Round              | 1600            | 436      | 27.25                 | 1st      | 106      | 6.62                  | 3rd      | 330      |                         |

From the following tables may be had particulars regarding the chemical and bacteriological examination of the various samples submitted. It has to be noted, however, that as no marks were awarded for fat content, the chemical examination was not made in each round.

### DAIRY FARMS.

| <i>Com-<br/>petitor.</i> | <i>Month.</i> | <i>Sample.</i>      | <i>Fat<br/>Content.</i> | <i>Bacterial<br/>count per c.c.</i> | <i>Coliform Organisms.</i> | <i>Remarks.</i>          |
|--------------------------|---------------|---------------------|-------------------------|-------------------------------------|----------------------------|--------------------------|
| A.                       | Feb.          | Ordinary.<br>Round. | 3.70                    | 10,000                              | Absent in 1 c.c.           | Equal to Certified Milk. |
|                          | Mar.          | do.                 | 3.65                    | 2,440                               | do.                        | do.                      |
|                          | Mar.          | Surprise.           | ..                      | 630                                 | do.                        |                          |
|                          | Apr.          | Ordinary.           | ..                      | 1000                                | do.                        |                          |
|                          | May           | do.                 | 3.86                    | 2,720                               | Present in 1 c.c.          |                          |
|                          | May           | Surprise            | ..                      | 2,880                               | Absent in 1 c.c.           |                          |
|                          | June          | Ordinary            | ..                      | 310,000                             | do.                        |                          |
|                          | June          | Surprise            | ..                      | 51,600                              | Present in 1 c.c.          |                          |
| B.                       | Feb.          | Ordinary            | 3.21                    | 12,500                              | Absent in 1 c.c.           | Equal to Certified Milk. |
|                          | Mar.          | do.                 | 3.67                    | 17,120                              | Present in 1 c.c.          |                          |
|                          | Mar.          | Surprise.           | ..                      | 95,600                              | Absent in 1 c.c.           |                          |
|                          | Apr.          | Ordinary.           | ..                      | 750                                 | do.                        |                          |
|                          | May           | do.                 | 3.50                    | 7320                                | do.                        |                          |
|                          | May           | Surprise.           | ..                      | 5,280                               | Absent in 1 c.c.           |                          |
|                          | June          | Ordinary            | ..                      | 4,600,000                           | Present in 1/1000 c.c.     |                          |
|                          | June          | Surprise            | ..                      | 2,680,000                           | Present in 1/10 c.c.       |                          |
| C.                       | Feb.          | Ordinary            | 3.54                    | 100,400                             | Present in 1/1000 c.c.     |                          |
|                          | Mar.          | Ordinary.           | 3.84                    | 30,000                              | Present in 1/100 c.c.      |                          |
|                          | Mar.          | Surprise.           | ..                      | 82,800                              | Present in 1/1000 c.c.     |                          |
|                          | Apr.          | Ordinary            | ..                      | 850                                 | Present in 1 c.c.          |                          |
|                          | May           | do.                 | 3.36                    | 14,900                              | Absent in 1 c.c.           |                          |
|                          | May           | Surprise.           | ..                      | 7,680                               | Present in 1/10 c.c.       |                          |
|                          | June          | Ordinary            | ..                      | 28,440                              | Present in 1 c.c.          |                          |
|                          | June          | Surprise            | ..                      | 1,740,000                           | Present in 1 c.c.          |                          |



# DAIRY FARMS—Continued.

| <i>Com-<br/>petitor.</i> | <i>Month.</i> | <i>Sample.</i> | <i>Fat<br/>Content.</i> | <i>Bacterial<br/>count per c.c.</i> | <i>Coliform Organisms.</i> | <i>Remarks.</i>          |
|--------------------------|---------------|----------------|-------------------------|-------------------------------------|----------------------------|--------------------------|
| D.                       | Feb.          | Ordinary       | 3.4                     | 7,560                               | Absent in 1 c.c.           |                          |
|                          | Mar.          | do.            | 3.37                    | 4,120                               | Present in 1 c.c.          |                          |
|                          | Mar.          | Surprise.      | ..                      | 6,200                               | do.                        |                          |
|                          | Apr.          | Ordinary.      | ..                      | 1,000                               | do.                        |                          |
|                          | May           | do.            | 3.11                    | 830                                 | do.                        |                          |
|                          | May           | Surprise.      | ..                      | 3,300                               | Absent in 1 c.c.           |                          |
|                          | June          | Ordinary       | ..                      | 4,740                               | do.                        |                          |
|                          | June          | Surprise.      | ..                      | 2,172,000                           | do.                        |                          |
| E.                       | Feb.          | Ordinary.      | 3.54                    | 10,000                              | Absent in 1 c.c.           | Equal to Certified Milk. |
|                          | Mar.          | do.            | 3.74                    | 49,100                              | Present in c.c.            |                          |
|                          | Mar.          | Surprise.      | ..                      | 11,380                              | do.                        |                          |
|                          | Apr.          | Ordinary.      | ..                      | 870                                 | do.                        |                          |
|                          | May           | do.            | 3.50                    | 92,000                              | Absent in 1 c.c.           |                          |
|                          | May           | Surprise.      | ..                      | 12,680                              | do.                        |                          |
|                          | June          | Ordinary.      | ..                      | 3,256,000                           | Present in 1/10 c.c.       |                          |
|                          | June          | Surprise.      | ..                      | 4,280,000                           | Absent in 1 c.c.           |                          |

# DAIRIES.

| <i>Com-<br/>petitor.</i> | <i>Month.</i> | <i>Sample.</i> | <i>Fat<br/>Content.</i> | <i>Bacterial<br/>count per c.c.</i> | <i>Coliform Organisms.</i> | <i>Remarks.</i>                 |
|--------------------------|---------------|----------------|-------------------------|-------------------------------------|----------------------------|---------------------------------|
| F.                       | Feb.          | Ordinary.      | 3.70                    | 10,968                              | Present in 1 c.c.          | Equal to Certified Milk.        |
|                          | Mar.          | do.            | 3.79                    | 161,600                             | Present in 1/1000 c.c.     |                                 |
|                          | Mar.          | Surprise.      | ..                      | 52,400                              | Present in 1/1000 c.c.     |                                 |
|                          | Apr.          | Ordinary.      | ..                      | 3,320                               | Absent in 1 c.c.           |                                 |
|                          | May.          | do.            | 3.87                    | 10,040                              | do.                        |                                 |
|                          | May.          | Surprise.      | ..                      | 46,100                              | Present in 1/10 c.c.       |                                 |
|                          | June.         | Ordinary.      | ..                      | 6,800,000                           | Present in 1 c.c.          |                                 |
|                          | June.         | Surprise.      | ..                      | 1,192,000                           | Absent in 1 c.c.           |                                 |
| G.                       | Feb.          | Ordinary.      | 4.15                    | 4,000                               | Absent in 1 c.c.           | Equal to Certified Milk.<br>do. |
|                          | Mar.          | do.            | 4.12                    | 15,500                              | Absent in 1 c.c.           |                                 |
|                          | Mar.          | Surprise.      | ..                      | 6,280                               | Present in 1 c.c.          | Equal to Certified Milk.        |
|                          | Apr.          | Ordinary.      | ..                      | 1,370                               | Absent in 1 c.c.           |                                 |
|                          | May.          | do.            | 3.92                    | 10,210                              | do.                        |                                 |
|                          | May.          | Surprise.      | ..                      | 21,200                              | Present in 1/1000 c.c.     |                                 |
|                          | June.         | Ordinary       | ..                      | 9,920                               | Present in 1/10 c.c.       |                                 |
|                          | June.         | Surprise.      | ..                      | 1,504,000                           | Present in 1/100 c.c.      |                                 |
| H.                       | Feb.          | Ordinary.      | 3.74                    | 10,840                              | Present in 1 c.c.          |                                 |
|                          | Mar.          | do.            | 3.67                    | 11,280                              | do.                        |                                 |
|                          | Mar.          | Surprise.      | ..                      | 19,360                              | Present in 1/100 c.c.      |                                 |
|                          | Apr.          | Ordinary.      | ..                      | 4,010                               | Present in 1 c.c.          |                                 |
|                          | May.          | do.            | ..                      | 480,000                             | Absent in 1 c.c.           |                                 |
|                          | May.          | Surprise.      | ..                      | 12,520                              | Present in 1/100 c.c.      |                                 |
|                          | June.         | Ordinary.      | ..                      | 2,740,000                           | Absent in 1 c.c.           |                                 |
|                          | June.         | Surprise.      | ..                      | 1,523,000                           | Present in 1 c.c.          |                                 |

Throughout the course of this Competition it will be observed that chemical analysis of the milk for fat content was made during the months of February, March and May and that altogether 23 samples were analysed. The average fat content of those 23 samples is 3.65 per cent.

I have the honour to be,

GENTLEMEN,

Your obedient Servant,

JOHN ROSS, A.R.San.I.,  
*Sanitary Inspector.*

